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SYSTEMATIC EXPERIMENTAL EVALUATION OF LIFEBOAT EVACUATION PERFORMANCE IN A RANGE OF ENVIRONMENTAL CONDITIONS

PHASE II

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Transportation Development Centre
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November 2003

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by:
António J. Simões Ré
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Since the accepted measures in the industry are a blend of metric and imperial, both metric and imperial measures are used.

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16. Abstract

The capabilities of two marine evacuation systems were investigated using systematic series of model experiments in a large test facility at the Institute for Ocean Technology in January 2002.

Tests were done with the widely used conventional davit launched twin falls lifeboat and a similar system with the addition of a flexible boom. The performance of both systems was evaluated as a function of weather conditions, ranging from calm conditions to severe storms. In addition, the effects of the configuration of the evacuation station were examined, including the orientation of the boat at launch and its clearance from the vessel. Evacuation tests were done in intact and damaged conditions.

Results of this large experimental campaign are presented. This work aims to address a long-standing knowledge gap by providing objective, empirical data that can be used by designers, regulators and others in their decisions concerning safety.

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16. Résumé

Deux systèmes d'évacuation en mer ont été étudiés au moyen d'une série d'essais sur maquette réalisés dans un des bassins de l'Institut des technologies océaniques, en janvier 2002.

Les essais ont porté sur un bossoir d'embarcation à treuil double, le système couramment utilisé pour la mise à l'eau de radeaux de sauvetage, et sur un autre système semblable, auquel avait été ajouté un tangon écarteur flexible. Les performances des deux systèmes ont été évaluées dans diverses conditions météorologiques, allant d'une mer calme à de violentes tempêtes. Les effets de la configuration du dispositif de mise à l'eau ont également été examinés, y compris l'orientation du radeau et sa distance par rapport au navire. Les essais ont eu lieu avec une plate-forme intacte et une plate-forme endommagée.

Le document présente les résultats de cette vaste campagne d'essais. Ce travail a pour but de combler une brèche de longue date dans les connaissances, en mettant à la disposition des concepteurs, organismes de réglementation et autres groupes intéressés, des données objectives et empiriques sur lesquelles appuyer leurs décisions concernant la sécurité à bord des plates-formes en mer.

17. Mots clés
ESMEF, embarcation de sauvetage motorisée entièrement fermée, dégagement, orientation, échelle de Beaufort, zone de danger, zone d'amerrissage, zone de récupération, recul, recul progressif, longueur de trajectoire, collisions, zone à éviter

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The authors also thank NRC/IOT personnel who contributed to the design, fabrication and instrumentation of the models as well as Offshore Engineering Basin technical staff who helped conduct the experiments. Special thanks are offered to E. Kennedy and the undergraduate engineering students who made great contributions to the overall project.

EXECUTIVE SUMMARY

This project involved a systematic study aimed at establishing the capabilities of evacuation systems installed on offshore structures as a function of environmental conditions, installation conditions, and load capacity of the life craft.

Model scale experiments on an evacuation system were performed from a fixed platform at the Institute for Ocean Technology (IOT) Offshore Engineering Basin (OEB) in January 2002.

A conventional twin falls davit evacuation system fitted with a flexible boom was used to deploy a Totally Enclosed Motor Propelled Survival Craft (TEMPSC) from a fixed platform into wind and wave conditions ranging from calm to storm conditions.

The experiments involved the investigation of the performance of the evacuation system in seas ranging from Beaufort 0 (calm) to Beaufort 8 (fresh gale) equivalent. Particular attention was focused on the effects of TEMPSC loading conditions (either 100 percent or 70 percent capacity), TEMPSC orientation, intact versus damaged installation, direction of weather relative to launch, use of flexible boom or davit system alone, wave type (regular or irregular) and wave steepness. All deployments took place from the windward side.

The model TEMPSC was launched at random positions with respect to incident waves, and propulsion power was available when the TEMPSC entered the water. The results of 404 deployments are presented.

An earlier phase of this research consisted of a set of trial model scale experiments of lifeboat evacuations from a fixed platform (see TP 13986E). These tests demonstrated that model testing is an appropriate tool for the study of evacuation, particularly for investigating performance in rough environmental conditions. During Phase I, a collection of performance parameters was found to have practical use for evaluating evacuation capabilities, and the results have provided guidance for this phase of the research program.

Transport Canada, Canada-Newfoundland Offshore Petroleum Board, Offshore Safety and Survival Centre, Department of Mines and Energy Newfoundland and Labrador, and other provincial government representatives witnessed some of the experiments.

A series of three volumes presents the results of Phase I experiments. The first volume includes all the evacuation data together with the calibrations, environmental matching and analysis procedures. Volume 2 covers the first 10 performance measures, and Volume 3 presents performance measures 11 to 13.

The evacuation system performance deteriorated with a gradual decline in weather conditions. The proposed zones (danger, splash-down and rescue) provided a very useful framework for the analysis and interpretation of the results.

SOMMAIRE

Ce projet consistait en des essais systématiques destinés à établir les performances des systèmes d'évacuation qui équipent les plates-formes en mer, en fonction des conditions environnementales, de l'état de l'installation et de la charge utile du radeau de sauvetage.

Des essais sur maquette d'un système d'évacuation ont été réalisés à partir d'une plate-forme fixe, dans le bassin d'étude des ouvrages de haute mer de l'Institut des technologies océaniques (ITO), en janvier 2002.

Un bossoir d'embarcation à double treuil conventionnel équipé d'un tangon écarteur flexible a été utilisé pour mettre à l'eau une embarcation de sauvetage motorisée entièrement fermée (ESMEF) à partir d'une plate-forme fixe, dans des conditions de vent et de houle allant de «calmes» à «tempête».

Les expériences visaient à évaluer les performances du système d'évacuation dans des mers correspondant aux degrés 0 (vent calme) à 8 (coup de vent) de l'échelle de Beaufort. Une attention particulière a été portée aux effets des conditions de chargement de l'ESMEF (à 100 % ou 70 % de sa capacité), de l'orientation de l'ESMEF, de l'état de l'installation (intacte ou endommagée), de la direction du vent et des vagues par rapport à la mise à l'eau, de l'utilisation du tangon écarteur ou du bossoir seul, du type de vagues (régulières ou irrégulières) et de la cambrure des vagues. Toutes les mises à l'eau ont eu lieu face au vent.

La maquette d'ESMEF (chargée à 100 % de sa capacité) était mise à l'eau dans une position aléatoire par rapport aux vagues incidentes. L'ESMEF disposait d'une puissance de propulsion dès le moment où elle touchait l'eau. Les résultats de 404 déploiements sont présentés.

Dans une phase antérieure de cette recherche, des essais sur maquette d'évacuations par radeau de sauvetage à partir d'une plate-forme fixe avaient eu lieu (voir TP 13986E). Ces essais avaient montré que des essais sur maquette constituent un outil approprié pour l'étude des performances de systèmes d'évacuation, en particulier dans des conditions environnementales difficiles. Cette première phase avait permis de déterminer une série de paramètres utiles pour évaluer les capacités d'évacuation, et les résultats ont guidé la présente phase du programme de recherche.

Transports Canada, l'Office Canada–Terre-Neuve des hydrocarbures extracôtiers, l'*Offshore Safety and Survival Centre*, le ministère des Mines et de l'Énergie de Terre Neuve-et-Labrador et d'autres représentants provinciaux ont assisté à certains des essais.

Les résultats des essais de la phase 1 font l'objet de trois volumes. Le premier comprend toutes les données concernant les évacuations ainsi que les étalonnages, les catégories de conditions environnementales et les méthodes d'analyse. Le volume 2 couvre les 10 premiers critères de performance et le volume 3, les critères 11 à 13.

Les performances du système d'évacuation se sont dégradées à la mesure du déclin graduel des conditions météorologiques. Les catégories de zones proposées (zone à éviter, zone d'amerrissage et zone de récupération) se sont avérées très utiles pour l'analyse et l'interprétation des résultats.

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GLOSSARY

100F	100 percent complement in the lifeboat
70F	70 percent complement in the lifeboat
A/D	Analog/Digital
ADT	Angular displacement transducer
C4	Distance from the lifeboat to the installation, 12.8 m
COLL	Collinear Environment (Wind & Waves)
CROSS	Crossed Environment (Wind & Waves)
DAMH	Damage High
DAML	Damage Low
DAVIT	Crane like device for suspending or lowering equipment (as a lifeboat)
EER	Escape Evacuation and Rescue
FLEX	Flexible Boom
GEDAP	Generalized Experiment Control and Data Acquisition Package
GRP	Glass Reinforced Plastic
H3	Height from the keel of the lifeboat to the water, 25 m
IMO	International Maritime Organization
INT	Intact
IOT	Institute for Ocean Technology
IRREG	Irregular Waves
JONSWAP	Joint North Sea Wave Observation Project
LED	Light Emitting Diode
NEFF	Data Acquisition System from NEFF Instrument Corporation
NRC	National Research Council
NTSC	National Television Systems Committee
OEB	Offshore Engineering Basin
PAR	Parallel launch
PER	Perpendicular Launch
QOTS	Qualisys Optical Tracking System
REG	Regular Waves
SVHS	Super-Video Home System
TEMPSC	Totally Enclosed Motor Propelled Survival Craft
VHS	Video Home system
ZCA	Zero Crossing Analysis

1.0 INTRODUCTION

This report covers a series of systematic physical model scale experiments performed on a fixed offshore installation fitted with a conventional twin-falls davit and flexible boom evacuation system.

The experiments were aimed at evaluating lifeboat evacuation capabilities as a function of environmental conditions, installation conditions, and Totally Enclosed Motor Propelled Survival Craft (TEMPSC) load capacity, and at developing and refining measures of capability, or performance, that have practical utility in the context of goal-based regulations.

A specific group of performance measures was found to have practical use for evaluating evacuation capabilities from earlier research phases. The initial trial experiments provided guidance for subsequent phases of the research program, part of which is presented here.

Evacuation of an offshore petroleum installation can occur in a range of situations, from a routine training exercise, to a precautionary partial evacuation, to an emergency. The degree of stress and related human factors, and the degree of physical impairment of the installation and personnel are related to the situation. An evacuation of healthy personnel carried out with well-maintained equipment during a training exercise in good weather is likely to be more successful than an emergency evacuation of distressed and possibly injured personnel in rough weather with equipment that might be damaged by the event that caused the emergency.

The experiments reported here focused on evacuation by lifeboats during emergencies, which must necessarily be done in prevailing weather conditions. Systematic physical model experiments allowed us to investigate evacuation performance and generate statistically reliable data that would otherwise be prohibitively dangerous to collect with full-scale manned equipment under controlled conditions.

The experiments were conducted at the Institute for Ocean Technology (IOT) Offshore Engineering Basin (OEB) during the month of January 2002. The experimental work dealt only with the evacuation phase of the Escape-Evacuation-Rescue (EER) process. The launch process is of interest, starting with lowering and splash-down, and ending with sail-away to a rescue area some distance away from the structure.

Launch failures due to equipment malfunctions, such as accidental release or the inability to release, were not modelled. Also unaccounted for in the modelling was the role of maintenance. However, every mechanical component was modelled so that it performed accurately in accordance with the full-scale system.

2.0 PROJECT OBJECTIVES

The main objective of this work was to evaluate the performance of a TEMPSC launched from a stationary platform in eight different environmental conditions, ranging from calm water to a fresh gale (the equivalent of a Beaufort 8). In addition, the effects of changing the system's configuration are quantified in this report. Seven of nine different configuration parameters were varied: TEMPSC loads (either 100 percent or 70 percent capacity), TEMPSC orientation, installation conditions (intact versus damaged), direction of weather relative to launch, use of flexible boom or not, wave conditions (regular or irregular) and wave steepness. Height and clearance of the TEMPSC were constant throughout all testing.

Although the importance of human behaviour, training and human physiology are recognized as important factors in an emergency evacuation, these aspects were not treated in the physical model experiments. The reliability of evacuation technology and maintenance were not modelled in these tests either. The benefits of these experiments include the quantification of an evacuation system's performance in varied environmental conditions and the development of information useful to offshore platform managers in emergency evacuation situations.

3.0 PERFORMANCE MEASURES

Performance measures for an evacuation system that have potential practical utility were used in the analysis of the experimental results. A set of 12 measures was used to quantify the performance of the twin-falls davit launched TEMPSC, and of the same system fitted with a flexible boom from a stationary platform. The measures reported here are based on measures that originated in the initial experiments by Simões Ré and Veitch [1] and have evolved further [2, 3, 4]. Some of these measures have to be considered in combination, whereas others can be interpreted alone. The performance measures are presented in Table 3.1 and a brief description is given below.

Table 3.1 Performance Measures

Item	Description of performance measure
1	Elapsed time from launch to splash-down
2	Elapsed time from splash-down to splash-down border
3	Elapsed time from splash-down to clear rescue zone border
4	Avoidance of collisions during lowering
5	Avoidance of collisions after launch
6	Accuracy of launch position relative to target point
7	Extent of setback
8	Path length from splash-down to splash-down border
9	Path length from splash-down to clear rescue zone border
10	Accelerations during lowering
11	Accelerations during sail-away
12	Seaworthiness criteria, progressive setback

Several evacuation zones were defined in Figure 3.1 to provide a framework for the measurement of evacuation performance. The splash-down zone is centred on the target launch point and is circumscribed by a boundary that is described as the area required by the TEMPSC to begin making way after launch. For this project, a size was set somewhat arbitrarily at 15 m radius. The splash-down zone is shown to be tangent to the boundary of an exclusion zone.

The exclusion zone should encompass all collision hazards and should be large enough to accommodate launching in damaged conditions. In this analysis, the exclusion distance used was 4.6 m. The rescue zone boundary is defined as the distance from the installation that is considered safe for rescue operations. A distance of 25 m was used in this project. Quantifying the exact distance for this rescue zone is still open to discussion. For example, it could be the closest distance to the installation that a standby vessel is positioned in an emergency situation. The splash-down, exclusion and rescue zones are, in practice, specific to every installation and lifeboat station arrangement. As shown in Figure 3.1, the region between the exclusion and rescue zone boundaries is the clearing zone.

The first three performance measures listed in Table 3.1 are time measures for the three phases of evacuation. The first is the time required from launch start to splash-down, or the lowering phase. It may appear that this should be minimized by maximum mechanical operation. However, it must be considered that in certain circumstances a delay in lowering could aid in avoiding hazards, in particular unfavourable approaching wave conditions. Prolonging lowering by timing the splash-down might not necessarily be to the detriment of the evacuation. The second time measure gives the time elapsed for the TEMPSC to vacate the splash-down zone. This reflects the time it takes for the lifeboat to be in control and start making way after splash-down. The third time measure – the time required for the TEMPSC to clear to a rescue zone after splash-down – covers the entire sail-away phase of evacuation.

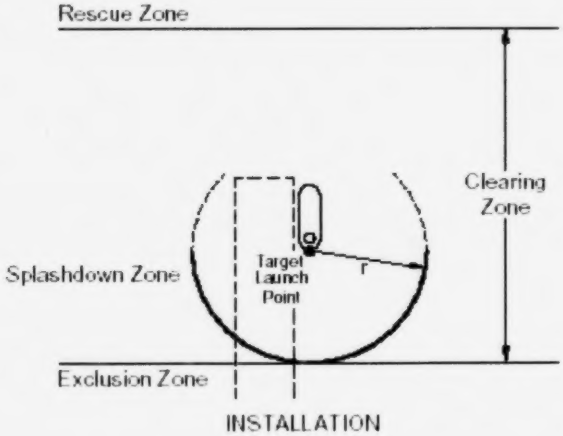


Figure 3.1 Evacuation Zones

The fourth performance measure deals with collisions that may occur between the lifeboat and the installation during lowering. Collisions are hazardous and can lead to injuries and fatalities, which stem from damage to the lifeboat itself. Collisions after splash-down, which are referred to in the fifth performance measure, occur when the boat gets pushed into the exclusion zone and impacts the installation.

In the case of a TEMPSC lifeboat station, the point directly below the lifeboat in its deployed position is known as the launch target point. Since it is a target, the TEMPSC's launch accuracy is measured by how close the boat comes to it. This also illustrates the degree of control that the launch system has over the deployment of the boat during lowering. This is the sixth performance measure.

The success of the TEMPSC's escape also depends on the distance that the lifeboat is set back by waves, which is another performance measure. Setback is illustrated in Figure 3.2.

The eighth and ninth performance measures are the path lengths covered in two phases corresponding to performance measure numbers two and three. They measure the directional control of the lifeboat and how far it deviates from an ideal straight path as it clears both the splash-down zone and the rescue zone.

The tenth and eleventh performance measures are the accelerations of the TEMPSC during lowering and sail-away. During lowering the important acceleration to observe is the maximum z-acceleration. This accurately describes the amount of force that can impact the lifeboat and those inside when being lowered. Accelerations during sail-away are important when assessing the success of the deployment and the performance of the TEMPSC in rough weather.

If the lifeboat is set back by waves and still does not make it to the rescue zone due to further wave encounters, this is considered a weather limit of the lifeboat performance. This is quantified by the twelfth performance measure, called progressive setback, which is a further indication of the seaworthiness of the lifeboat. Evacuation systems should not be expected to function in weather conditions that go beyond the point at which progressive setback occurs. Other similar limits should be set for capsizing and excessive motions.

The 12 performance measures presented above were used to define the operation of the TEMPSC in an emergency evacuation. These performance measures were also the basis for a quantitative analysis of the data collected. The analysis procedure applied is explained in reference to the measures themselves.

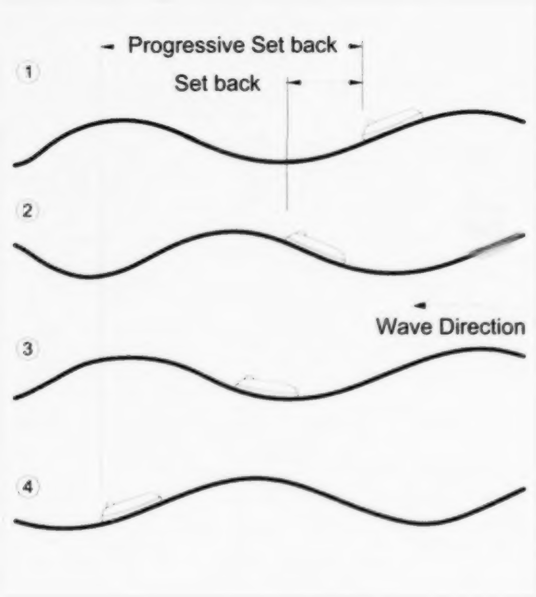


Figure 3.2 Setback

4.0 TEST SETUP

The tests were performed in the Offshore Engineering Basin (OEB) at National Research Council Canada's Institute for Ocean Technology (NRC/IOT). The OEB has a 65 m × 26 m working area, and a working depth of 3 m. Individual hydraulically activated wave maker segments (168) cover two adjacent sides of the basin. Opposite to the wave makers, expanded sheet metal passive wave absorbers are fitted to reduce wave reflection in the wave basin.

The water depth during Phase II testing was set at 2.8 m. Waves were generated from both the bank of wave boards on the west and south sides as shown in the installation setup in Figure 4.1. The majority of the experiments called for collinear environment (wind and waves coming from the same direction) with waves generated by the west boards, but a small number called for crossed environment (wind and waves coming from different directions) with waves generated by both the west and south wave boards.

A platform was built and installed in the OEB specifically for the evacuation system experiments. The platform was a four-legged truss structure that was attached to the basin floor with concrete anchors. The legs of the platform were constructed with small diameter cylinder members that minimized wave reflections. A fine net was attached to the platform behind the TEMPSC's landing area to minimize the chances of damaging the model in the event it was pushed into or under the platform. These features are illustrated in the elevation presented in Figure 4.2.

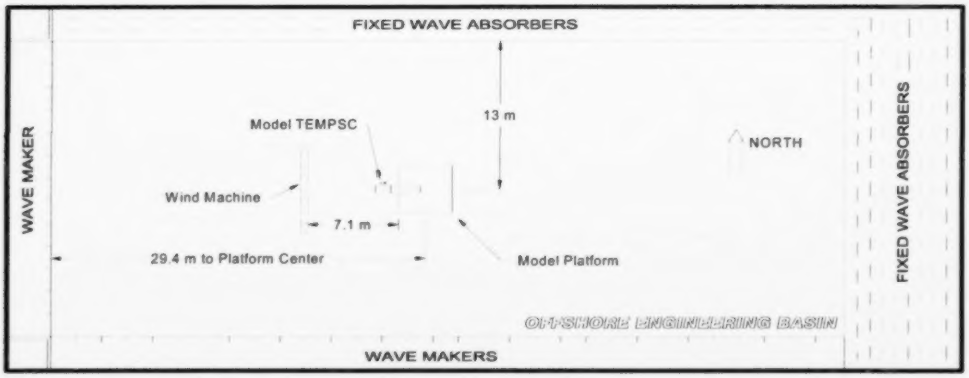

FIXED WAVE ABSORBERS
WAVE MAKER
13 m
Model TEMPSC
NORTH
Wind Machine
7.1 m
29.4 m to Platform Center
Model Platform
FIXED WAVE ABSORBERS
OFFSHORE ENGINEERING BASIN
WAVE MAKERS

Figure 4.1 Plan: General Arrangement of the Test Setup in the OEB

The lifeboat station was designed and built in three modules. The davits, winches, and TEMPSC were mounted on a wooden deck, which was in turn fitted to a steel truss beam. The steel truss beam was attached to a lifting table in a cantilevered arrangement. The modular arrangement allowed rapid changes to be made to the configuration of the lifeboat station. All the setup arrangements are shown in Appendix 2.

Two different launch orientations were tested: one with the TEMPSC parallel to the platform, and the second with the TEMPSC perpendicular to the platform. The configuration change, from parallel to perpendicular, was made by rotating the wooden deck through 90° and reconnecting it to the cantilever beam, as illustrated in Figure 4.3.

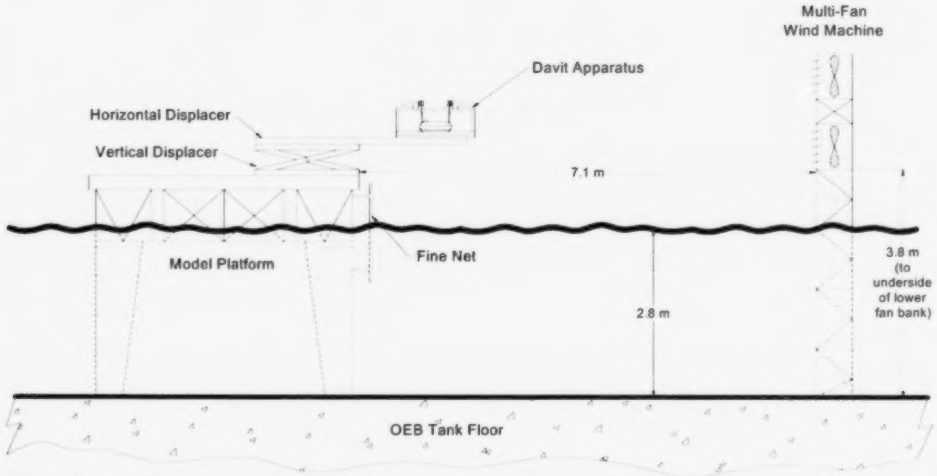

Multi-Fan
Wind Machine
Davit Apparatus
Horizontal Displacer
Vertical Displacer
7.1 m
Model Platform
Fine Net
3.8 m
(to
underside
of lower
fan bank)
2.8 m
OEB Tank Floor

Figure 4.2 Elevation: General Arrangement of the Test Setup in the OEB

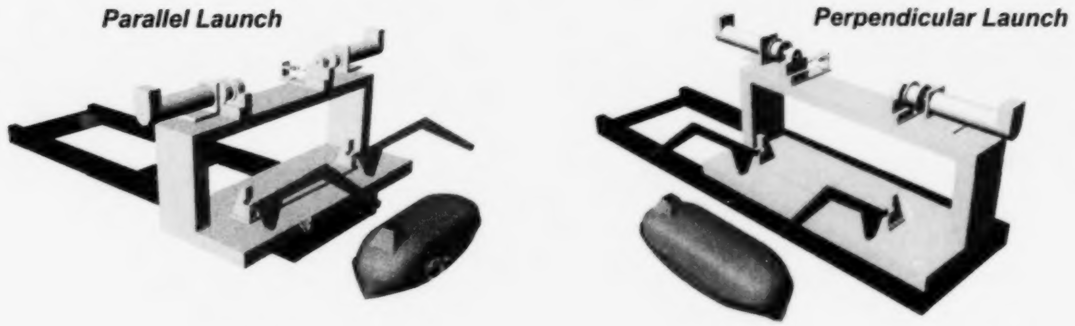


Figure 4.3 Parallel and Perpendicular Orientation of Lifeboat Station on Platform

4.1 Physical Models

4.1.1 Totally Enclosed Motor Propelled Survival Craft (TEMPSC)

The 1:13 model TEMPSC was representative of a typical 80-person craft. It was constructed of glass-reinforced plastic (GRP), had a displacement of 5.36 kg, and obtained an equivalent full-scale speed of 6.01 kn in calm water. The TEMPSC model was fabricated in two halves: hull and canopy. The hull and canopy mated along the gunwale line. A rubberized gasket was used between the two to prevent water ingress.

A steerable nozzle, nozzle servo, 39.6 mm four-bladed propeller, shaft, DC motor, motor controller, receiver unit, rechargeable battery pack, accelerometers, and simulated hydrostatic interlock release unit were fitted to the hull half.

Two mechanical releases for the twin falls with interlocking mechanical release servos, a wireless video camera, and a water detection light emitting diode (LED) were fitted to the canopy half. The LED was used to signal that the hydrostatic interlock had been released so that the hooks could be released.

Styrofoam spheres covered with reflective tape were placed either on top of 75 mm posts or directly attached to the canopy at several locations for use with the Qualisys Optical Tracking System (QOTS). The Styrofoam spheres had a diameter of approximately 38 mm.

The TEMPSC speed was determined by averaging the time required by the model to travel a distance of 20 m. The TEMPSC model speed trials were conducted in the towing tank in calm water with the model in its test configuration and load condition. An average speed of 6.01 kn (full scale) was achieved, which is slightly higher than the target of 6 kn required by international regulations (IMO 1997a). For repeatability purposes, the calm water speed tests were repeated three times. The overall TEMPSC forward speed was programmed into the controller. Hydrostatics, and swing test data are provided in Appendix 3.

4.1.2 Twin-Falls Davit Deployment System

The deployment system was of the straight fall, double wire category, with a TEMPSC stowed and launched either parallel or perpendicular to the installation. The basic test setup is shown in Figure 4.4.

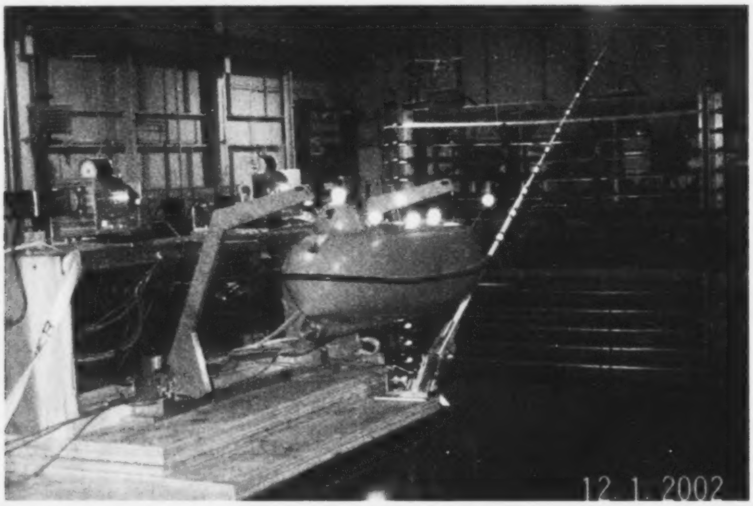


Figure 4.4 Twin-Falls Davit System Showing 1:13 Scale TEMPSC Model

The deployment clearance of the TEMPSC from the installation was set at a nominal value of 3.5 times the breadth of the TEMPSC (12.8 m full scale); the launch height was 30.0 m above the still water surface.

The davit system main components included the winch drums for cable storage, the winch brake for controlling the speed of descent, and the cables themselves. Cable length was modelled correctly. Other cable properties, such as diameter, breaking strength and stiffness, were not modelled.

The rate of descent of the TEMPSC was controlled by programming the DC motor controller to spool out cable from the winch drums at a full-scale rate of 0.9 $\mathrm{m{\cdot}s^{-1}}$ (54.0 $\mathrm{m{\cdot}min^{-1}}$). The lowering speed was obtained from the following formula:

$$S = 0.4 + 0.02H \tag{1}$$

Where S is the lowering speed in metres per second and H is the height in metres from the keel of the TEMPSC at its lowest point to the still water line.

Swivels were attached to the TEMPSC end of the davit cables. These were in turn fitted into the pins of the release blocks located at the bow and stern of the TEMPSC model. The pins of the release blocks were linked to a servomotor fitted in the TEMPSC canopy and activated from the side of the tank by a radio controller. Release of the forward and aft cables was simultaneous; no problems were encountered with the system.

4.1.3 Flexible Boom

A series of tests was performed using a flexible boom. The flexible boom is designed to pull the TEMPSC away from the platform using the spring properties of the boom. In the full-scale version, a hydraulic actuator control system controls the boom angle during launch. The boom angle start ranges from angles of 35° and 45° relative to the waterline. As the TEMPSC is lowered, the angle decreases and the boom begins to flex. When the TEMPSC reaches the waterline and the davit lines are released, the stored energy in the boom pulls the TEMPSC away from the platform.

For the model tests, a 25.0 m full-scale boom was attached to the davit deployment platform with a 25.0 m full-scale tag line connected to the bow of the TEMPSC near the forward davit connection, as illustrated in Figure 4.5.

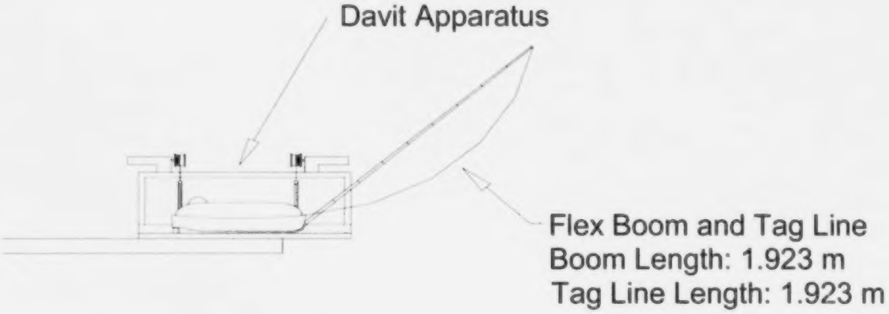


Figure 4.5 Flexible Boom Model Setup

The system consisted of a set of hinges attached to a base plate. The hinges had a horizontal axis, allowing the boom to move in a vertical plane with a swing of about 55°. The boom support was provided by an electronic spring controlled by a feedback loop of ram extension versus load. The boom was parked at a nominal angle of 35° with respect to the baseline. A fixed length of line, or tag line, was attached at one end to the tip of the boom and at the other end to a metal ring. The ring fitted over the boom hook attached at the bow of the TEMPSC forward of the davit release block. This setup is similar to the setup arrangement in full scale.

In a deployment, as the TEMPSC is lowered by the davit falls, tension is generated on the tag line, causing the boom to rotate at the base and bend throughout its length until the falls are released. The TEMPSC is then pulled through the water by the tag line away from the platform and as it passes under the boom tip, the tag line releases. The pulling motion is generated by the hydraulic pressure buildup in the hydraulic cylinder attached to the saddle. In the model version, this was accomplished via a controlled servomotor that was calibrated to behave in the same fashion as the full-scale system. The hydraulic cylinder pulls the boom upward, causing the TEMPSC to be pulled in an outward direction away from the installation. During deployment and prior to the release of the TEMPSC from the davit falls, the tag line changes the heading of the TEMPSC away from the platform and stabilizes the TEMPSC as it is being lowered to the water surface.

Table 4.1 and Figure 4.6 show boom tip deflection versus load. Boom deflection experiments were carried out with the boom in a horizontal position.

The model boom was made from a fishing rod stock. The rod was modified to allow for the tag line and load cells to be attached (Figure 4.7). In addition, specialized software and hardware were designed and built to accurately model the full-scale hydraulic control system as shown in Figure 4.8.

Table 4.1 Flexible Boom Craft Deflection Characteristics

Weight [g]	Deflection (mm)
100	85
200	167
300	237
400	306
500	368
600	420
700.1	467
800.2	507
900.1	546
1053	595

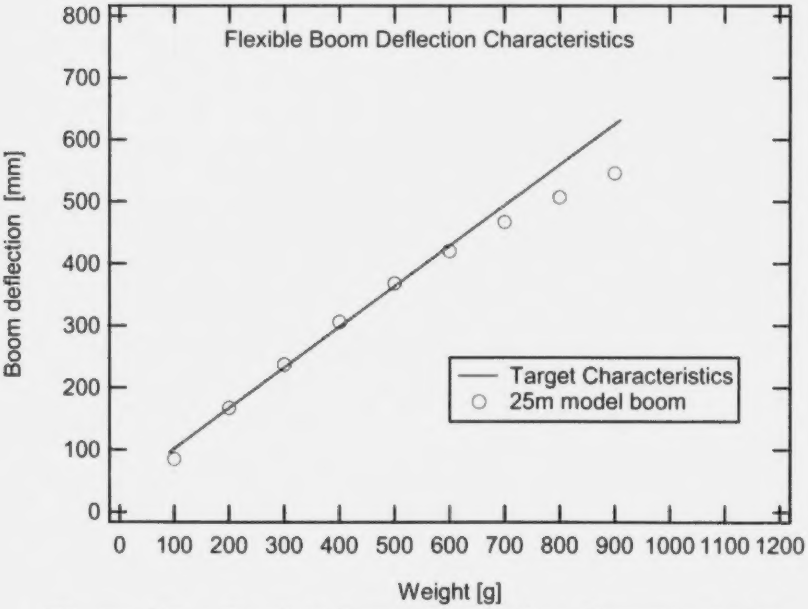


Figure 4.6 Flexible Boom Deflection Characteristics

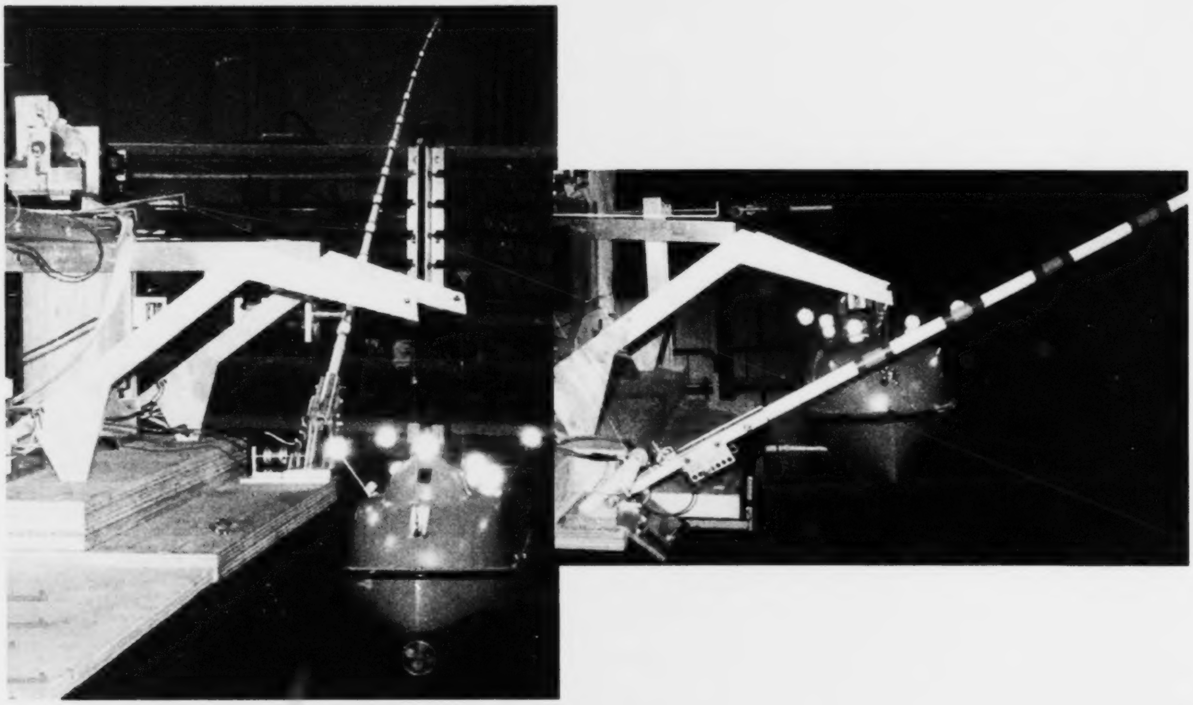


Figure 4.7 Flexible Boom

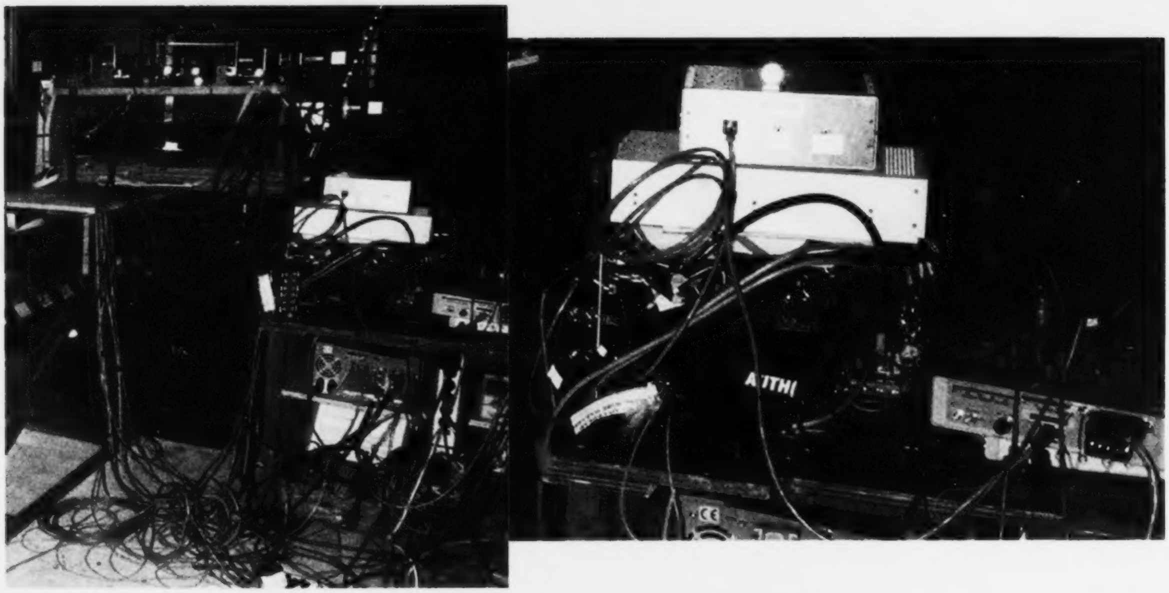


Figure 4.8 Hardware for Boom Control

4.2 Damaged Conditions

To determine the effects of launching a TEMPSC when the platform or installation is in a damaged condition (i.e. listing), a series of experiments was performed. To simulate the damaged condition, the cantilevered beam was tilted about the axis perpendicular to the wind and waves x-axis with some angle relative to the waterline. To tilt the beam, a second steel frame was made and fitted to the lifting table. The cantilever beam was then attached by sliding it into a slot on this steel frame. A typical damaged setup is shown in Figure 4.9.

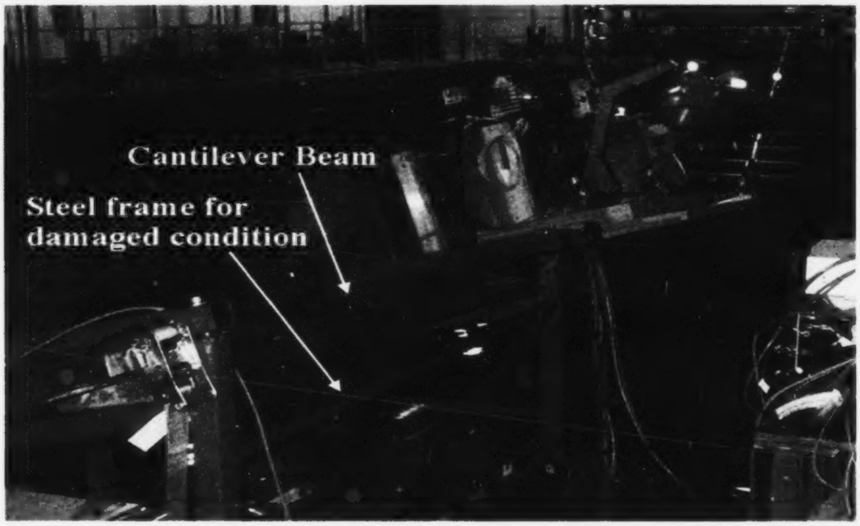


Figure 4.9 Low Side Damage Condition

4.3 Environmental Conditions

This series of experiments required the generation of six different environmental conditions for waves and wind (calm to Beaufort 8). The nominal wave heights and wind speeds corresponding to each of the six Beaufort conditions are given in Table 4.2.

Regular waves were used for most of the tests, while a few tests were performed in irregular waves. All regular and irregular waves propagated normal to the platform, except for two series of experiments with regular waves (three weather conditions) and two with irregular waves (one weather condition), which propagated at 15° to the platform. For the regular waves, the target wave height value was in the Beaufort scale range of significant wave height, rather than mean wave height.

A general layout of the OEB showing the direction of the waves, wind and the positioning of the fixed installation is presented in Appendix 1.

Table 4.2 Environmental Conditions

(Beaufort) Description	Mean Wind [m·s^{-1}]	Average Wave [m]	Significant Wave [m]
(0) Calm water	0.0	0.00	0.00
(4) Moderate breeze	5.6 - 8.3	0.42 - 0.89	0.67 - 1.40
(5) Fresh breeze	8.7 - 10.8	1.15 - 1.53	1.85 - 2.44
(6) Strong breeze	11.3 - 13.9	1.95 - 2.93	3.04 - 4.58
(7) Moderate gale	14.4 - 17.0	3.35 - 4.88	5.48 - 7.93
(8) Fresh gale	17.4 - 20.6	5.79 - 8.54	9.14 - 13.72

The wave modelling was based on matching the wave height and period, while the wind was matched on mean wind speed. The wave matching was performed without the model in the basin, while for the wind speed calibration, the fixed installation model was secured to the basin floor in its testing configuration. The required quantities were adjusted by iteration to the desired settings and the control signals recorded for playback during the actual experiment.

The sizes of the different waves and wind speeds are compared in Figure 4.10. This illustration also shows the relative size of the model TEMPSC.

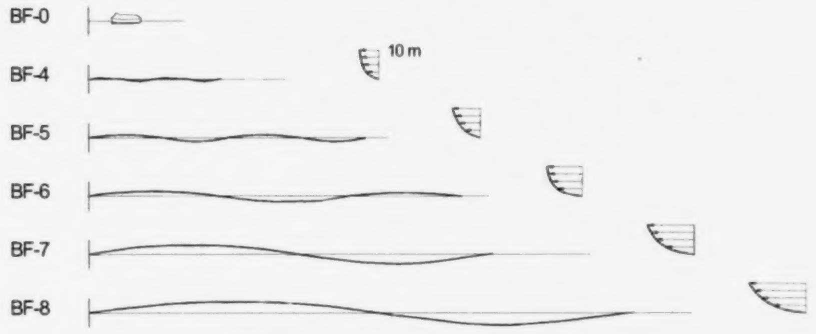


Figure 4.10 Wave Profiles

4.3.1 Regular Waves

A multi-segmented, hydraulically powered, paddle-type wave maker provided wave simulation at the OEB. Wave direction can be varied from 0° to 90° in the basin.

The test program required the generation of seven regular waves: five run collinearly with the wind and two crossed with the wind. The waves were initially matched on wave height and period without the platform model in the basin. For each matched wave, a segment of 20 cycles was chosen to evaluate the wave parameters. The 20-cycle segment was selected by windowing through the entire time trace.

The following criteria were applied to each segment selected:

Deviation from Height Target = $(H_{Avg} - H_{Target})/H_{Target}$	<5%
Wave Height Stability = $(H_{Max} - H_{Min})/H_{avg}$	<5%
Wave Crest Stability = $(C_{Max} - C_{Min})/C_{Avg}$	<2.5%

The selected segments were examined and compared to the wave criteria target tolerances. Importance was placed on the repeatability aspect of the waves, rather than matching specific criteria with regard to crest and height stability.

During testing, the wave signal was also recorded, but due to small reflections from the model, wave probes in the water, camera towers, etc., this did not exactly mimic the matched wave.

For the most part, the waves were regular waves run with the basin in flume mode and with a 180° direction (head seas). The files were defined using the following naming convention:

W#_α_β_00δ

where:

W#	- indicates weather number
α	- denotes scale factor
β	- denotes wave steepness
δ	- defines the incremental matching attempt number

For example, the run designated "W5_13_15_002" defines a regular wave for weather 5 (Beaufort 7) with a model scale 13, wave steepness 15, and a matching attempt number of 2.

For a few runs, regular waves were run with at a 195° direction (15° off the head seas direction). For these runs, the files were defined according to the following naming convention:

##W#_α_β_00δ

where:

##	- indicates the direction off the 180° (head seas)
W#	- indicates weather number
α	- denotes scale factor
β	- denotes wave steepness
δ	- defines the incremental matching attempt number

For example, the run designated "15W5_13_15_005" defines a regular wave 15 degrees off the head sea direction for weather 5 (Beaufort 7) with a model scale of 13, wave steepness of 15, and a matching attempt number of 5.

4.3.2 Irregular Waves

The OEB facility can create irregular spectrums with a maximum wave height of 0.76 m and in directions varying from 0° to 90° degrees.

The test program called for the creation of two irregular waves with the characteristics shown in Table 4.3. The waves had a repeat period of 1 hour, full scale. To ensure repeatability between tests, the complete spectrum was scanned for the most severe conditions. Snapshot segments were then used for each individual test. The waves were matched on significant wave height and peak period.

Table 4.3 Irregular Waves

Wave File Name	Sig. Wave (m)	Peak Period (s)	Gamma	Beaufort
JON_HS6P7_TP9P3	6.7	9.3	1.4	7
JON15_HS6P7_TP9P3	6.7	9.3	1.4	7

The files were defined using the following naming convention:

JON_HSαPα_TPβPβ_00δ
JON#_HSαPα_TPβPβ_00δ

where:

JON - indicates JONSWAP Spectrum
- indicates the direction off the 180° (head seas) in degrees
HS - denotes significant wave height
TP - denotes peak period
α - define the significant wave height in metres
β - defines the peak wave period of the spectrum in seconds
δ - defines the incremental matching attempt number
P - defines the decimal place

For example, the run designated "JON_HS6P7_TP9P3" defines a JONSWAP spectrum with a significant wave height of 6.7 m and a peak period of 9.3 seconds. The significant wave height was determined by zero-crossing analysis, while the spectrum peak period was determined by spectral density analysis.

The matching process involved identifying the spectral components of the group and then assigning each a relative phase component based on its celerity, such that the resulting sequence conformed to the required group at the specified location in the basin. The leading and following ends of the group were ramped up and down, respectively, to avoid spurious components caused by abrupt motions of the wave maker. All wave calibrations are shown in Appendix 4.

4.3.3 Wind

Wind was simulated using two horizontal arrays of six analog-controlled fans, one on top of the other and mounted on support frames (towers). The fans were positioned such that the wind direction was 180° to the installation at a distance of 7.10 m from the front edge of the platform. Each fan had a blade diameter of 530 mm and was powered by a DC motor capable of rotating at speeds of up to 5000 rpm. Horizontal louvers, two per array (one left and one right) were attached to the front of the fans. The louver orientation with respect to the horizontal in the top array was 12° right and 18° left, while for the bottom array both louver sets were oriented at 28° to the horizontal. These louvers were used to produce a more uniform flow at the platform from the lifeboat station level to the still waterline level. The louvers directed the flow downward or upward depending on the setting. The wind generator could produce winds of speeds up to 12 m/s.

The wind speed was calibrated prior to the test program with the platform model installed. The fans were run at a steady speed and adjusted so that at a distance of 7.10 m, the mean wind speed was the one specified in the test program. Figure 4.11 illustrates the setup of the wind fans in relation to the platform.

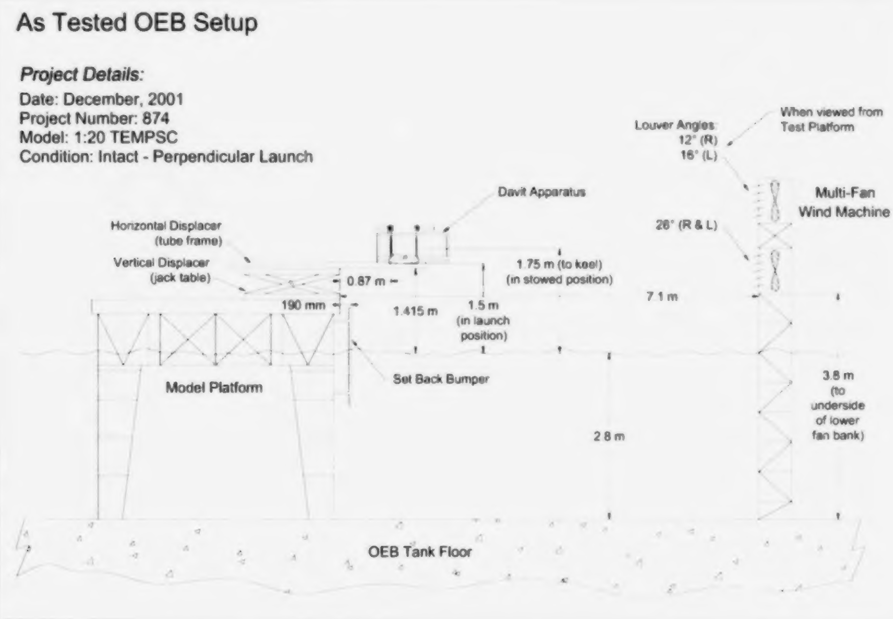

As Tested OEB Setup
Project Details:
Date: December, 2001
Project Number: 874
Model: 1:20 TEMPSC
Condition: Intact - Perpendicular Launch
Louver Angles:
12° (R)
16° (L)
When viewed from Test Platform
Davit Apparatus
Multi-Fan Wind Machine
28° (R & L)
Horizontal Displacer (tube frame)
Vertical Displacer (jack table)
0.87 m
1.75 m (to keel) (in stowed position)
7.1 m
190 mm
1.415 m
1.5 m (in launch position)
Set Back Bumper
Model Platform
3.8 m (to underside of lower fan bank)
2.8 m
OEB Tank Floor

Figure 4.11 Typical Setup Showing Location of Fans

4.4 Instrumentation

The following instrumentation was used for this series of tests:

1. Qualisys optical tracking system providing six degrees of freedom motions of the TEMPSC model with respect to the earth fixed coordinate system (see Section 4.8).
2. Four anemometers, one mounted at the lifeboat storage position, one mounted at the deployment position, one mounted just below the deployment position, and one mounted near the waterline.
3. Three accelerometers and three rate gyros to record TEMPSC longitudinal, lateral and vertical accelerations during lowering, splash-down, and sail-away.
4. Two load cells to monitor line loads during deployment.
5. An electrical circuit mimicking a hydrostatic interlock release unit with LED to alert the operator that davit release could proceed.
6. Motor controller to provide accurate davit pay-out rates.
7. Electronic switch identifying davit release time.
8. Seven capacitance wave probes (one upstream between the wave makers and the wind fan structure, one on the port side in line with the geometrical centre of the installation, and five on the port side of the platform in line with the stern, amidships and bow of the TEMPSC in its deployment ready position) to give feedback on the wave environment.
9. Two load cells, one at the base and one at the tip of the boom, to measure the equivalent ram and tag line loads, respectively. An angular displacement transducer (ADT) measured the angle of the boom with the horizontal.
10. Motor controller with feedback loop to control the action of the boom.

Radio telemetry was used to send the data signals from the model to the acquisition system. A full description of this can be found in Appendix 6.

Video records of the tests were recorded with three fixed video cameras and a hand-held one (a complete video log is provided in Appendix 9). Still photographs were taken with a 35 mm and a digital camera. The fixed video cameras were located as follows:

a) One camera mounted in the TEMPSC at the coxswain station, providing the operator with the same view as the TEMPSC coxswain from the start of TEMPSC descent, to splash-down and sail-away.

b) A ceiling mounted camera, providing a bird's-eye view of the entire process.

c) A camera mounted on the side of the basin, providing a profile view of the tests.

d) A hand-held camera mounted on a tripod along the side and end of the basin, providing alternate views of the lowering, splash down and sail-away.

4.5 Wave Timer

A wave timer device, developed especially for these tests, was used in order to place the TEMPSC on either a trough/upslope or a crest during the launching phase of the experiments. The reason for doing this is explained further in section 5.0. Finch et al. [5] provide a complete description of the wave timer.

The device's hardware and software were wired into the davit launching system and controlled the launch timing of the TEMPSC. By controlling the launch timing, it was possible to launch the TEMPSC on either the trough/upslope or the crest of the wave. It was not possible to launch on the downslope because of the shadowing effect of the wave. With the descent rate fixed, it was impossible for the davit system to lower the TEMPSC fast enough to hit the downslope before the next wave impacted the TEMPSC.

4.6 Calibrations

All analog sensors were calibrated before the start of the experiments. The response of the sensor to a set of exciting loads was measured and a straight line fitted through the data points by means of a least squares technique.

The line is defined by two constants A and B, which relate the integer analog-to-digital (A/D) converter reading (counts) to the physical quantities being measured according to the following linear transformation:

$$X = A(k) \times (M - B(k)) \tag{2}$$

where:

X = physical value in physical units

M = integer A/D converter reading

A(k) = sensitivity of the sensor connected to the A/D channel *k* in physical units per count

B(k) = zero offset of the sensor connected to A/D channel *k* in counts

The purpose of the calculation is to determine the constants A(k) and B(k), and to ensure that the sensor functions properly and has a linear response. The constant A(k) also represents the digital resolution of the measurement. All calibrations are provided in Appendix 5.

4.7 Data Acquisition

Data acquisition was made through three different systems, the Neff620-500, telemetry and video. The Neff data were sampled at 50 Hz for all the channels except for the acceleration and rate instruments, which were sampled at 500 Hz. The telemetry data were sampled at 472 Hz. The video data were sampled at a normal recording speed of 30 frames per second. The Neff system was shore based, while the telemetry was installed on TEMPSC.

The video acquisition system consisted of four VHS and SVHS video cameras. All the cameras except the one on board the TEMPSC were attached to pan and tilt mechanisms controlled from the observation tower. These cameras had remotely controlled zoom and focusing. The wireless camera on board the TEMPSC was mounted on a lexan frame with minimal degree of adjustment and no modifications to the focus. The video format of all the cameras was NTSC.

4.8 Coordinate System

The coordinate systems used in the analysis of this series of experiments are defined as follows:

- Basin Coordinate System

The global right-handed system has its origin at the geometrical centre of the platform at the calm water level (i.e. 2.8 m above basin floor). The X-axis is defined as up the basin in the direction of the west wall wave makers. The Y-axis is defined to port and the Z-axis upward (i.e. typical right-hand coordinate system). Wave probe, anemometer, lifeboat station, camera locations and wind machine locations are referenced to this system.

- TEMPSC Coordinate System

TEMPSC is fixed with its origin at the aft end of the keel along the centre line. This right-handed coordinate system is fixed to the TEMPSC and moves with it. It defines the location of equipment in the TEMPSC, the location of the release mechanisms, the wireless camera position, the accelerometers, brass pins for hydrostatic interlock simulation, and Qualisys markers.

4.9 Error Analysis

In order to assess the accuracy of the data collected during the test program and to identify areas for improvement in both the setup and data collection of future experiments, the project team conducted an error analysis. Table 4.11 gives a total error that was calculated by combining all the error components for the different channels collected, and taking into consideration data recording delays. Lindroth [6], gives details on the measurement data error analysis.

Table 4.4 Error Calculations

DESCRIPTION	ERROR %	DELAY
Wave height	± 0.19	-
Davit lowering speed	± 0.43	-
Positioning (surge/sway/heave)	± 0.13	20 ms
Positioning (roll/pitch/yaw)	± 0.48	20 ms
Immersion	± 0.11	0.25 s
Wind speed	± 0.69	-
Davit release	-	0.75 s
Davit load	± 1.75	20 μs
Acceleration	± 1.78	200 μs
*Tag line load cell	± 0.025	-
*Flexible boom load cell	± 0.025	-

* Calculations not part of Lindroth [6]

4.10 Decay Tests

Decay tests were conducted on the free-floating TEMPSC model. Heave, pitch, and roll tests were conducted. These series of experiments were performed prior to the start of the test program. They were necessary to ensure that the periods for the TEMPSC (i.e. heave, roll and pitch) were realistic. Decay test data are provided in Appendix 7.

5.0 TEST PLAN

The experiments were divided up into series that typically involved a systematic change of one parameter while all others were held constant. A code system was used throughout the test program to represent the test setup conditions, which is shown in Table 5.1 below, along with the corresponding value.

In the descriptions of the individual test series that follow, the symbols are used for the fixed values (of installation, wave direction, wave condition, deployment system, orientation, clearance, height, and payload) and the measured values of wave height and wind speed are tabulated.

Table 5.1 Code for Test Setup – Phase II

Weather [BF scale]	**W1** (BF0)	**W2** (BF4)	**W3** (BF5)	**W4** (BF6)	**W5** (BF7)	**W6** (BF8)
Wave Steepness [m]	**10**		**15**		**20**	
Installation	**INT** (Intact)		**DAML** (Damage Low)		**DAMH** (Damage High)	
Environment Direction	**COLL** (Collinear)			**CROSS** (Crossed)		
Wave Condition	**REG** (Regular)			**IRREG** (Irregular)		
Deployment System	**FLEX** (Boom)			**DAVIT** (No Boom)		
Orientation	**PER** (Perpendicular)			**PAR** (Parallel)		
Clearance [m]	**C4** 12.8 m					
Height [m]	**H3** 25 m					
Payload [Full/Partial]	**100F** (100% Full)			**70F** (70% Full)		

Series A was the main test series. It investigated weather effects from Beaufort 0 to Beaufort 8 conditions in the baseline launch conditions, which included a clearance of C4 (12.883 m), a height of H3 (25 m), and a perpendicular orientation (PER), as indicated in Table 5.2. In this phase of testing, the clearance and height remained fixed for each launch. Results of these tests show how performance changes with varying weather. In addition, the results provide a basis with which other test configurations are compared.

In Table 5.2 the first column denotes the test label, the second column shows the number of runs for each condition, and the third describes the weather condition in terms of the Beaufort scale. The fourth and fifth columns are the average measured mean wind and wave height, respectively.

Table 5.2 Series A: Weather Effects on Performance – Baseline Case

[W1-W6] in configuration [INT, COLL, REG, FLEX, PER, C4, H3, 100F]

Series Label	**# of runs**	**(Beaufort) Description**	**Mean Wind [m/s]**	**Mean Wave [m]**
A1	4	(0) Calm water	0.00	0.000
A2	4	(4) Moderate breeze	6.63	0.530
A3	4	(5) Fresh breeze	8.85	1.513
A4	6	(6) Strong breeze	12.38	3.844
A5	5	(7) Moderate gale	15.68	6.838
A6	4	(8) Fresh gale	18.49	8.573

Series B also investigated the effects of weather from Beaufort 0 to Beaufort 8, but the orientation for this set of launches was parallel to the platform, as shown in Table 5.3.

Table 5.3 Series B: Weather Effects on Performance

[W1-W6] in configuration [INT, COLL, REG, FLEX, PAR, C4, H3, 100F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
B1	5	(0) Calm water	0.00	0.000
B2	4	(4) Moderate breeze	5.58	0.377
B3	4	(5) Fresh breeze	8.30	1.377
B4	5	(6) Strong breeze	12.17	3.615
B5	5	(7) Moderate gale	15.30	6.413
B6	4	(8) Fresh gale	17.87	7.597

Series C, D, E, and F considered the effects that damaged launch conditions have on performance. In test series C, a high damage condition was simulated, while all other conditions remained the same as the baseline case. Series D tested the effects of a low damage condition, while all other conditions were kept constant. Series E and F also tested the effects of damaged conditions, but unlike the previous series, orientation was factored into the launches. In these two cases, the lifeboat was parallel to the platform.

Table 5.4 Series C: Damage Effects on Performance

[W1, W4-W6] in configuration [DAMH, COLL, REG, FLEX, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
C1	4	(0) Calm water	0.00	0.000
C4	5	(6) Strong breeze	13.40	3.884
C5	4	(7) Moderate gale	17.13	6.896
C6	4	(8) Fresh gale	21.99	8.413

Table 5.5 Series D: Damage Effects on Performance

[W1, W4-W6] in configuration [DAML, COLL, REG, FLEX, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
D1	4	(0) Calm water	0.00	0.000
D4	4	(6) Strong breeze	13.51	3.967
D5	4	(7) Moderate gale	16.23	6.808
D6	4	(8) Fresh gale	20.84	8.566

Table 5.6 Series E: Damage Effects on Performance

[W1, W4-W6] in configuration [DAMH, COLL, REG, FLEX, PAR, C4, H3, 100F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
E1	4	(0) Calm water	0.00	0.000
E4	4	(6) Strong breeze	12.72	3.856
E5	5	(7) Moderate gale	16.05	6.913
E6	4	(8) Fresh gale	18.75	8.605

Table 5.7 Series F: Damage Effects on Performance

[W1-W6] in configuration [DAML, COLL, REG, FLEX, PAR, C4, H3, 100F]

Series Label	# of runs	(Beaufort) description	Mean Wind [m/s]	Mean Wave [m]
F1	5	(0) Calm water	0.00	0.000
F4	4	(6) Strong breeze	13.18	3.884
F5	4	(7) Moderate gale	16.10	6.804
F6	4	(8) Fresh gale	19.29	8.354

Series G investigated the effects that payload has on the performance of the TEMPSC. This test series used the baseline conditions, except that instead of being loaded to full capacity it was loaded to 70 percent of capacity.

Table 5.8 Series G: Payload Effects on Performance

[W1-W6] in configuration [INT, COLL, REG, FLEX, PER, C4, H3, 70F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
G1	4	(0) Calm water	0.00	0.000
G2	4	(4) Moderate breeze	6.87	0.443
G3	4	(5) Fresh breeze	9.60	1.457
G4	4	(6) Strong breeze	12.96	3.936
G5	4	(7) Moderate gale	16.27	6.829
G6	4	(8) Fresh gale	17.98	8.614

Series H was a baseline case (see Table 5.9). It tested the effects of weather (Beaufort 0 to Beaufort 8) on performance when relying on the davit system rather than the flexible boom. Similarly, Series I investigated the effects of weather conditions while using the davit system. However, as can be seen in Table 5.10, the orientation for these sets of launches was parallel to the platform.

Table 5.9 Series H: Weather Effects on Performance – Baseline Case

[W1-W6] in configuration [INT, COLL, REG, DAVIT, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
H1	5	(0) Calm water	0.00	0.000
H2	4	(4) Moderate breeze	6.37	0.410
H3	4	(5) Fresh breeze	8.80	1.692
H4	4	(6) Strong breeze	12.49	3.892
H5	4	(7) Moderate gale	15.96	6.884
H6	4	(8) Fresh gale	18.42	8.561

Table 5.10 Series I: Weather Effects on Performance

[W1-W6] in configuration [INT, COLL, REG, DAVIT, PAR, C4, H3, 100F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
I1	7	(0) Calm water	0.00	0.000
I2	4	(4) Moderate breeze	6.86	0.372
I3	4	(5) Fresh breeze	9.48	1.379
I4	4	(6) Strong breeze	12.41	3.523
I5	3	(7) Moderate gale	15.86	6.464
I6	2	(8) Fresh gale	17.22	7.541

Series J, K, L, and M tested damaged launch conditions versus performance, without the flexible boom. In series J, a high damage condition was tested, while all other conditions remained the same as the baseline case (series H.) Series K tested the effects of a low damage condition, while all other conditions were kept constant. Series L and M also looked at the effects of damaged conditions, but the launch system was oriented parallel to the platform.

Table 5.11 Series J: Damage Effects on Performance

[W1, W4-W6] in configuration [DAMH, COLL, REG, DAVIT, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
J1	3	(0) Calm water	0.00	0.000
J4	4	(6) Strong breeze	13.53	3.826
J5	5	(7) Moderate gale	17.53	6.822
J6	4	(8) Fresh gale	21.04	8.341

Table 5.12 Series K: Damage Effects on Performance

[W1, W4-W6] in configuration [DAML, COLL, REG, DAVIT, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
K1	4	(0) Calm water	0.00	0.000
K4	5	(6) Strong breeze	13.84	3.852
K5	4	(7) Moderate gale	16.52	6.883
K6	4	(8) Fresh gale	19.82	8.489

Table 5.13 Series L: Damage Effects on Performance

[W1, W4-W6] in configuration [DAMH, COLL, REG, DAVIT, PAR, C4, H3, 100F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
L1	4	(0) Calm water	0.00	0.000
L4	4	(6) Strong breeze	12.97	3.838
L5	4	(7) Moderate gale	16.12	6.864
L6	4	(8) Fresh gale	19.16	8.440

Table 5.14 Series M: Damage Effects on Performance

[W1, W4-W6] in configuration [DAML, COLL, REG, DAVIT, PAR, C4, H3, 100F]

Series Label	# of runs	(Beaufort) Description	Mean Wind [m/s]	Mean Wave [m]
M1	4	(0) Calm water	0.00	0.000
M4	4	(6) Strong breeze	13.99	3.742
M5	4	(7) Moderate gale	16.44	6.829
M6	4	(8) Fresh gale	19.86	8.330

Series N tested the effects on payload, without the flexible boom. This case used the parallel launch condition and a 70 percent payload.

Table 5.15 Series N: Payload Effects on Performance

[W1, W4-W6] in configuration [INT, COLL, REG, DAVIT, PAR, C4, H3, 70F]

Series Label	# of runs	(Beaufort) description	Mean Wind [m/s]	Mean Wave [m]
N1	4	(0) Calm water	0.00	0.000
N2	4	(4) Moderate breeze	5.82	0.412
N3	4	(5) Fresh breeze	8.65	1.533
N4	4	(6) Strong breeze	11.82	3.893
N5	4	(7) Moderate gale	14.83	6.888
N6	4	(8) Fresh gale	18.11	8.363

Series O investigated the effects that wave steepness had on the performance of the TEMPSC. All other test series in Phase II used a wave steepness of 15, but these runs tested a steepness of 10 and 20.

Table 5.16 Series O: Wave Steepness

[W1,W5 & W6] in configuration [10, 20, INT, COLL, REG, DAVIT, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) description	Mean Wind [m/s]	Mean Wave [m]
O1	5	(0) Calm water	0.00	0.000
O5_10	4	(7) Moderate gale	16.00	6.270
O5_20	4	(7) Moderate gale	15.91	5.950
O6_10	4	(8) Fresh gale	18.72	8.290
O6_20	5	(8) Fresh gale	18.60	8.930

Series Q and R considered the effects that crossed environmental conditions have on performance. Series Q used the davit system while series R tested the flexible boom.

Table 5.17 Series Q: Crossed Environment

[W1, W4-W6] in configuration [INT, CROSS, REG, DAVIT, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) description	Mean Wind [m/s]	Mean Wave [m]
Q1	5	(0) Calm water	0.00	0.000
Q4	4	(6) Strong breeze	12.65	3.286
Q5	4	(7) Moderate gale	15.85	6.506
Q6	4	(8) Fresh gale	19.00	9.191

Table 5.18 Series R: Crossed Environment

[W1, W4-W6] in configuration [INT, CROSS, REG, FLEX, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) description	Mean Wind [m/s]	Mean Wave [m]
R1	8	(0) Calm water	0.00	0.000
R4	4	(6) Strong breeze	12.73	3.415
R5	4	(7) Moderate gale	16.50	6.523
R6	4	(8) Fresh gale	19.29	9.001

Series S, T, U and V tested performance in irregular waves. Test series S and U used the davit launch system, whereas series T and V used the davit system along with the flexible boom.

Table 5.19 Series S: Irregular Waves

[W1 & W5] in configuration [INT, COLL, IRREG, DAVIT, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) description	Mean Wind [m/s]	Sig Wave [m]
S1	2	(0) Calm water	0.00	0.000
S5	4	(7) Moderate gale	15.67	4.060

Table 5.20 Series T: Irregular Waves

[W1 & W5] in configuration [INT, COLL, IRREG, FLEX, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) description	Mean Wind [m/s]	Sig Wave [m]
T1	2	(0) Calm water	0.00	0.000
T5	3	(7) Moderate gale	14.88	4.210

Table 5.21 Series U: Irregular Waves

[W1 & W5] in configuration [INT, CROSS, IRREG, DAVIT, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) description	Mean Wind [m/s]	Mean Wave [m]
U1	2	(0) Calm water	0.00	0.000
U5	3	(7) Moderate gale	15.63	3.300

Table 5.22 Series V: Irregular Waves

[W1 & W5] in configuration [INT, CROSS, IRREG, FLEX, PER, C4, H3, 100F]

Series Label	# of runs	(Beaufort) description	Mean Wind [m/s]	Mean Wave [m]
V1	3	(0) Calm water	0.00	0.000
V5	3	(7) Moderate gale	15.71	3.450

5.1 Test Methodology

The calibrations followed the Institute for Ocean Technology's standard procedure for calibration, while the decay tests and general tests followed the methodology presented below.

Decay Tests

- Perform swing of the TEMPSC in air. Adjust ballast weights as necessary.
- Place TEMPSC in basin and check for trim and heel. Adjust as necessary.
- Perform heave, pitch and roll decay experiments on the free-floating TEMPSC.

After the calibration and decay tests were completed,the actual systematic investigation of the performance of the twin-falls davit launched TEMPSC from the fixed installation in a range of weather environments and system configurations was performed. The methodology for these types of tests was as follows:

- Wave probes were cleaned every morning prior to acquiring any data.
- Calm check runs were performed at the start of each day with the wind fans and wave makers off and with the TEMPSC in the stowed position.
- The test configuration was set according to the test matrix.
- The member of the project team in charge of the TEMPSC setup suited up and moved to an area underneath the TEMPSC station.
- The operator lowered the davit twin fall lines down to the water surface and the TEMPSC was attached to the lines.
- The TEMPSC was winched up to the proper launching height. This was accomplished by raising the davits a programmed distance past the launch position.
- The member of the project team in charge of the TEMPSC setup moved away from the test area.
- The data acquisition was started, followed by the wave makers, the video and the wind machine. After approximately 15-20 wave cycles passed the installation, the command to start deployment was given. The deployments were as random as possible.
- Once the first few waves passed the platform, the deployment started. Halfway between the TEMPSC launching rest position and the water surface, the TEMPSC propulsion system was started remotely.
- After splash-down the hydrostatic interlock activation signal was given, the blocks were opened, and the falls released. The rudder control was activated to help the TEMPSC sail away from the installation.
- The wave makers, video, and wind were stopped and the run was considered to be terminated. At this time the TEMPSC was manoeuvred back to the platform for pick up.
- After a few minutes the members of the project team started preparation for the next run. The time between test runs was set to 10 minutes.

Successful runs were defined as those in which the davit-line release mechanism, the flexible boom, and the TEMPSC functioned as intended.

6.0 DATA ANALYSIS AND TECHNIQUES

Results from each test were recorded in model scale units and checked at the time of testing. Some basic analysis was performed with statistics generated for each channel. These results were treated as preliminary results.

Results were converted to full-scale values for salt water and analyzed to provide event statistics of wind and wave conditions, TEMPSC lowering time, TEMPSC immersion, falls release, winch payout rate, TEMPSC boundary crossing (both in time and distance), average speed, wave phase deployment, missed target, setback, accelerations, and collision avoidance.

The following sections describe the techniques used to analyze the test data. In some cases packaged software was used, while in others, task specific software was developed for this experimental campaign.

6.1 Statistical Analysis

For each measured time series, the following parameters were calculated:

- Mean value of the time series: $\bar{x} = \frac{1}{N}\sum_{i=1}^{N} X_i$ (3)
- Minimum value
- Maximum value
- Standard deviation: $\sigma = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(X_i - \bar{x})^2}$ (4)

where: N is the total number of samples in the time series

X_I is a discrete sample of the time series

- Variance: σ^2 (5)

6.2 Zero-Crossing Analysis (ZCA)

A zero-crossing analysis was performed on the time series data using a GEDAP program, “ZCA”. The software checks the time spacing of the signal to ensure that the sampling rate is high enough to accurately perform zero-crossing analysis. The software is designed primarily for wave elevation records, but it may be used to analyze other types of data such as motions and forces. The ZCA performs both zero up- and down-crossings, and calculates parameters that are defined for each individual cycle in the record as well as parameters that apply to the entire record.

6.3 Deployment Analysis

This type of analysis was performed during the test program to ensure that the instrumentation was working properly. Data products from this type of analysis constituted time series and statistical summaries for the entire launching window as well as the following intervals: (S1) tare, (S2) stowed to embarkation, (S3) deployment start to splash-down (S4) splash-down to sail-away, and (S5) stowed to sail-away. Figure 6.1 illustrates the different intervals used in the calculations.

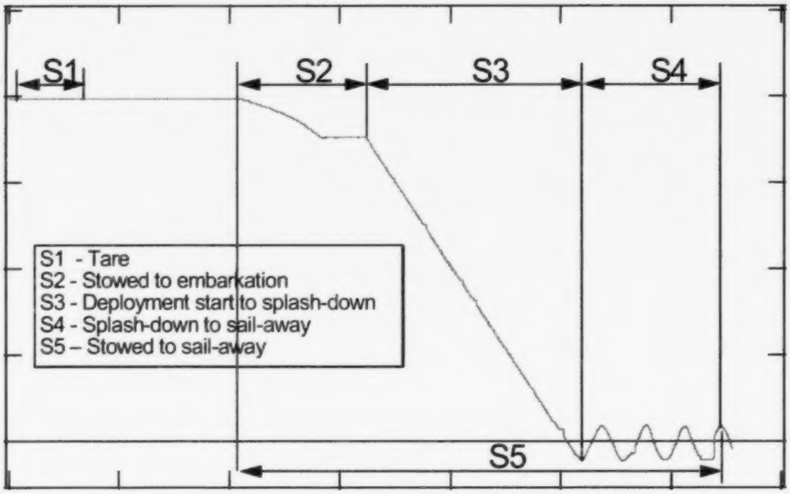

S1
S2
S3
S4
S5
S1 - Tare
S2 - Stowed to embarkation
S3 - Deployment start to splash-down
S4 - Splash-down to sail-away
S5 – Stowed to sail-away

Figure 6.1 Analysis Intervals

In the tare interval, statistics were calculated for the wave probes to allow any small offset to be removed. In intervals S2 to S4, basic statistics were calculated for all channels collected. In interval S5, ZCA and basic statistics were performed on the time series data for the environmental channels.

In the time series plots, the start of interval S3 represents the deployment start. Interval S4 captures all the data for the TEMPSC just after splash-down to the point it crosses the rescue zone boundary. Synchronization between the acquisition systems, and the shifting due to condition changes, were handled during this analysis. Synchronization between the data collected on the Neff and the data collected on telemetry was accomplished through synchronization channels, one on each system.

6.4 Performance Measures Analysis

The preliminary data were in the form of time histories graphed for each channel using a software program called IGOR. This program was used to extract information for each particular performance measure. The test data were processed using a variety of procedures to convert the initial results into plots and graphs for further interpretation.

Since the data collected in the majority of the channels was recorded at the same time and at the same frequency, the points in each time history correspond to the exact same time in each of the IGOR graphs. The exception to this was the acceleration channels, which were sampled at a frequency of 100 Hz. This allowed direct entry of data taken from IGOR graphs to cells in Microsoft Excel spreadsheets. These cells contained formulas used to manipulate the data in a specific manner so as to yield numbers important to the analysis of the data.

The final graphs developed using the IGOR and Excel programs are found in Appendix 8.

6.4.1 Elapsed Time to Complete Phases of Evacuation

The total elapsed time required to complete the sequential phases of evacuation can be divided into intervals. These intervals indicate the time necessary for each stage, from launch to splash-down, as well as the amount of time spent, if any, in each zone – splash-down, clearing, rescue, and exclusion.

Prior to obtaining the launch start point, excess data points from each channel were deleted. Using the davit payout graph, the points before the start of the plateau, which is located immediately in front of the second slope (S2), were removed. This left a graph similar to Figure 6.2. The launch start point was then determined by selecting the IGOR point at which the slope on the graph begins.

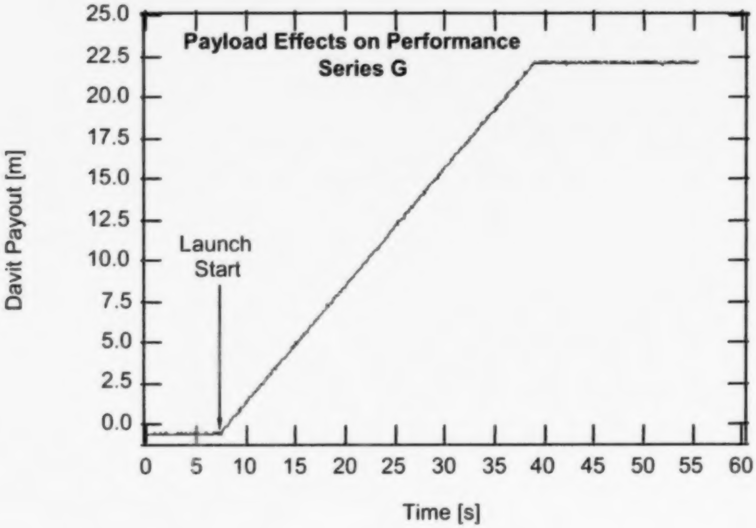


Figure 6.2 Davit Payout Channel - M544G4_004

The splash-down point was obtained using the lifeboat immersion (Figure 6.3). The splash-down point can be identified as the first point of the plateau between the zero voltage level and the maximum voltage (approximate 2 V).

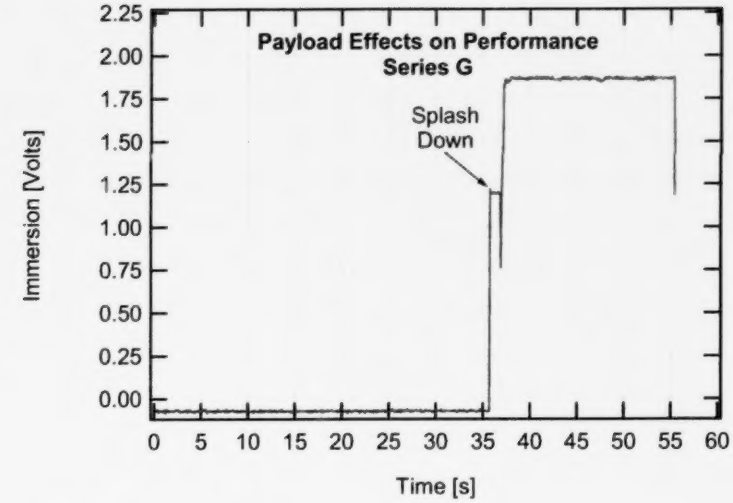


Figure 6.3 Immersion Channel – M544G4_004

Using a procedure developed for IGOR, the lowering, splash-down and sail-away phases of individual runs were presented in three different views: plan view (*xy*) (Figure 6.4), elevation abeam the TEMPSC (*xz*) view (Figure 6.5), and elevation looking along the centreline of the TEMPSC (*yz)* view (Figure 6.6). The boat's path was charted in each view and was used to illustrate the deployments.

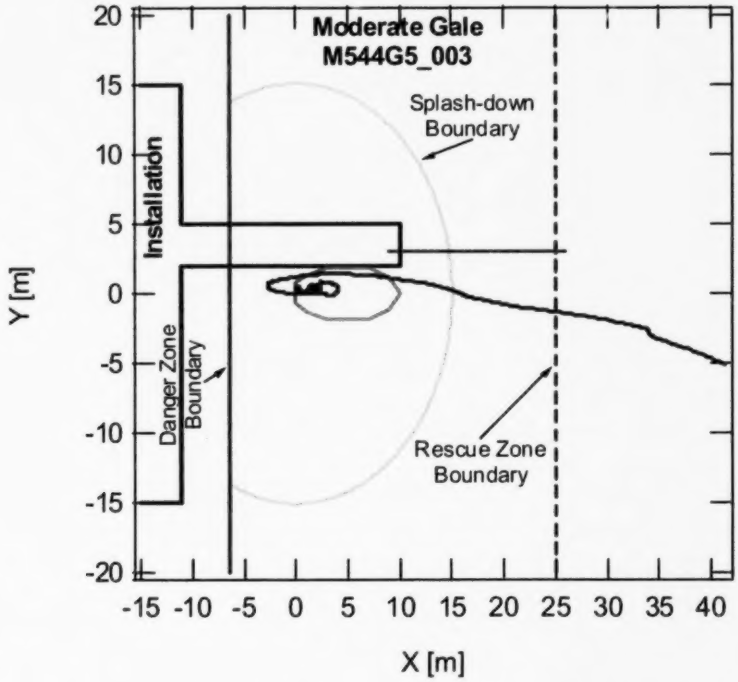


Figure 6.4 Plan View (XY) – M544G5_003

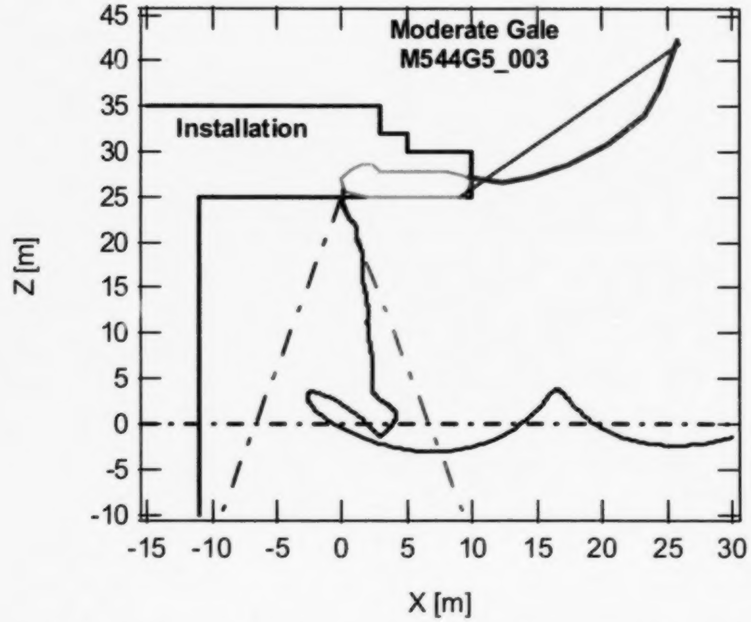


Figure 6.5 Elevation Abeam the TEMPSC View (XZ) – M544G5_003

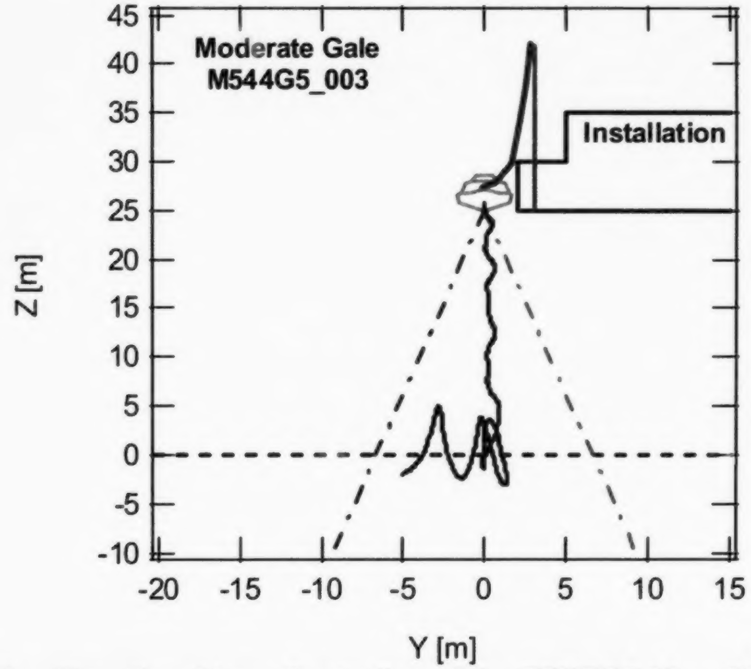


Figure 6.6 Elevation Along Centreline of the TEMPSC View (YZ) M544G5_003

The plan view (Figure 6.4) was also used to determine the IGOR point at which the lifeboat exits each respective zone, designated by the different boundary lines.

6.4.2 Avoidance of Collisions During Lowering and After Launch

In order to determine whether the lifeboat struck the platform or one of the supporting structures during the lowering stage, or after it was released from the davit lines, videos of each experiment were analyzed. Each individual run was recorded on videotape to allow for collision analysis.

6.4.3 Accuracy of Launch Position Relative to Target Launch Point

As discussed in the description of the performance measures in Section 3.0, the point directly below the lifeboat in its deployed position is the launch drop target point. The distance between the actual and target drop points is the missed target.

Using the davit payout channel (Figure 6.2), the launch start point was found to be the first IGOR point after the change in slope, and from the immersion channel (Figure 6.3) the first point of the plateau between the minimum and maximum voltage was taken to be the splash-down point, as stated in section 6.4.1.

Next, using IGOR, the Z-axis channel was graphed against the X-axis channel (Figure 6.7) as well as the Y-axis channel (Figure 6.8). With the IGOR points previously found for launch start and splash-down, the X, Y and Z coordinates of each point were located from the two graphs. The missed target was calculated from these points.

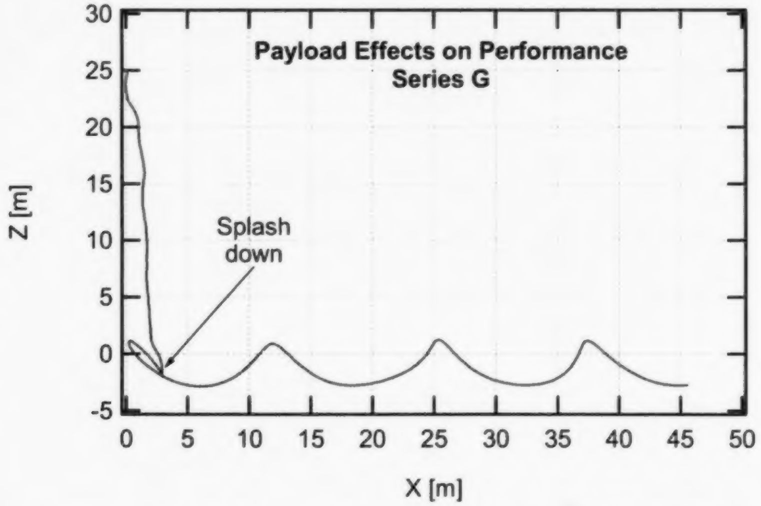


Figure 6.7 Z-axis Channel vs. X-axis Channel – M544G4_003

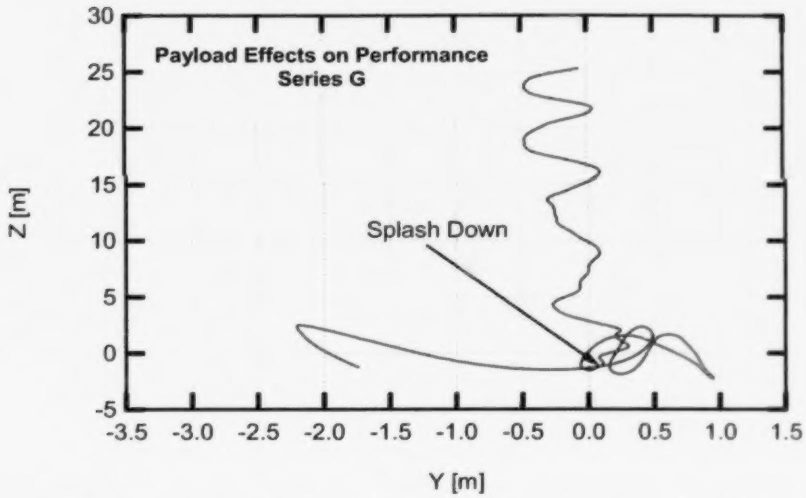


Figure 6.8 Z-axis Channel vs. Y-axis Channel – M544G4_003

6.4.4 Extent of Setback

Following splash-down, the TEMPSC attempted to clear the splash-down zone and make its way to the rescue zone, as illustrated in Figure 6.4. During this stage, its performance depends on the distance that the lifeboat is set back by waves.

The two graphs previously constructed for missed target analysis in section 6.4.3 are again used to determine the setback performance measure.

In the Z-axis versus X-axis graph shown in Figure 6.7, the minimum X value after the splash-down point is named the setback point. In Figures 6.9 and 6.10, the extent of setback for the particular run is illustrated.

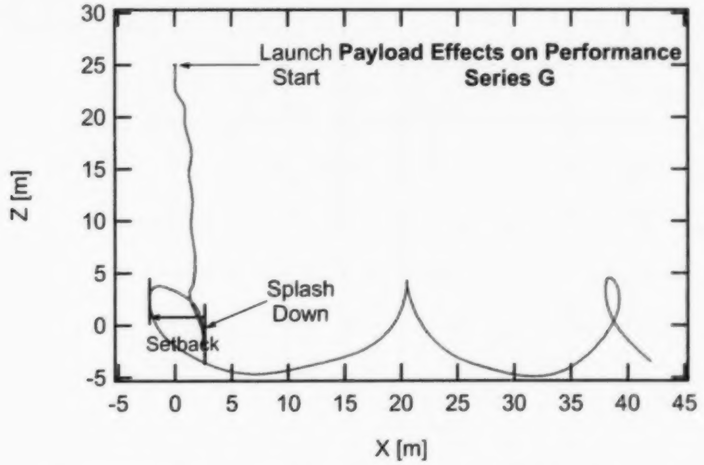


Figure 6.9 Z-axis vs. X-axis – M544G6_003

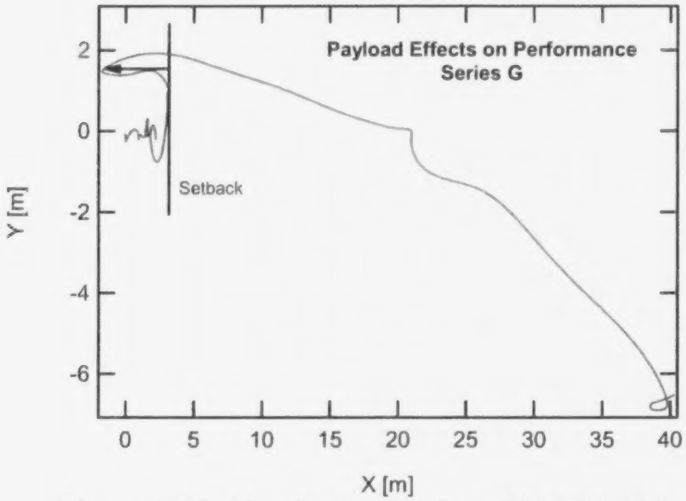


Figure 6.10 Y-axis vs. X-axis – M544G6_003

The setback point was used to record the X, Y and Z coordinates for each test from graphs similar to Figures 6.9 and 6.10.

6.4.5 Length of Path Covered During Sail-Away Phases

The path lengths were determined by identifying the point at which the TEMPSC crossed one of the boundaries, which are shown in Figure 6.4. The path length for each zone then was the distance from the splash-down point to the boundary crossing point. This distance was calculated using an algorithm generated in IGOR.

6.4.6 Accelerations During Lowering and Sail-Away

The X, Y and Z accelerations of the TEMPSC during lowering and sail-away were measured using three orthogonally arranged accelerometers. The data collected for the accelerations were sampled at a frequency 10 times that of the other channels. The components of acceleration and their resultant were plotted (see Figure 6.11).

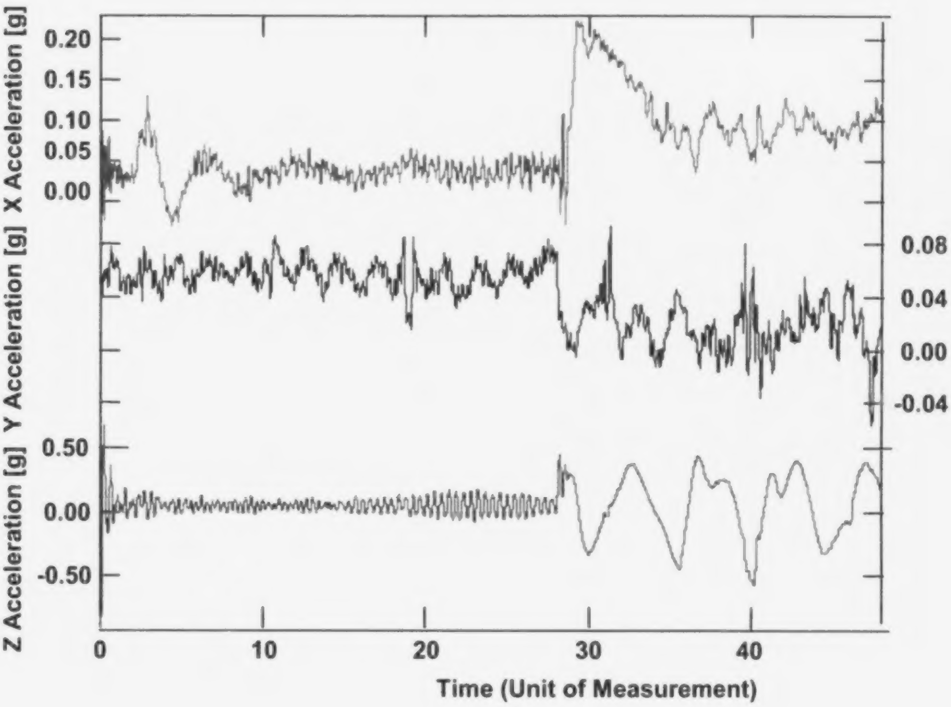


Figure 6.11 Resultant Acceleration – M544G4_002

Using the splash-down point previously recorded for each run, the greatest absolute value on the acceleration resultant graph was recorded. This was considered to be the largest acceleration experienced during the lowering of the TEMPSC. To find the greatest acceleration during sail-away, the largest absolute value of a data point found after the splash-down point on the resultant graph was determined. Once these points were obtained, the corresponding X, Y and Z acceleration components were found using the respective graphs (Figures 6.12 through 6.14)

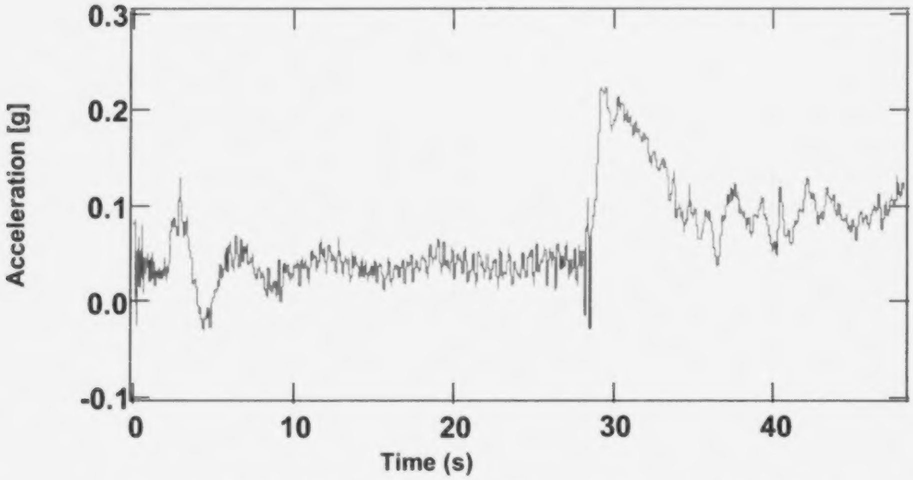


Figure 6.12 X Acceleration Channel – M544G4_002

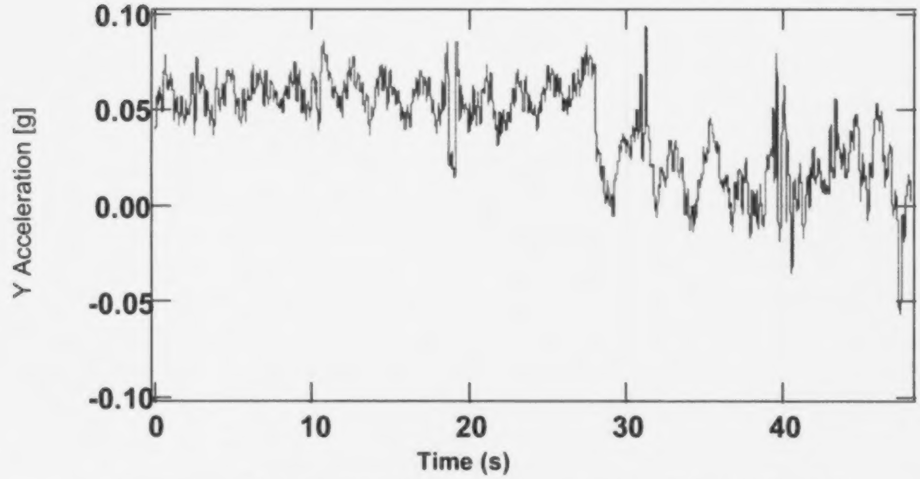


Figure 6.13 Y Acceleration Channel – M544G4_002

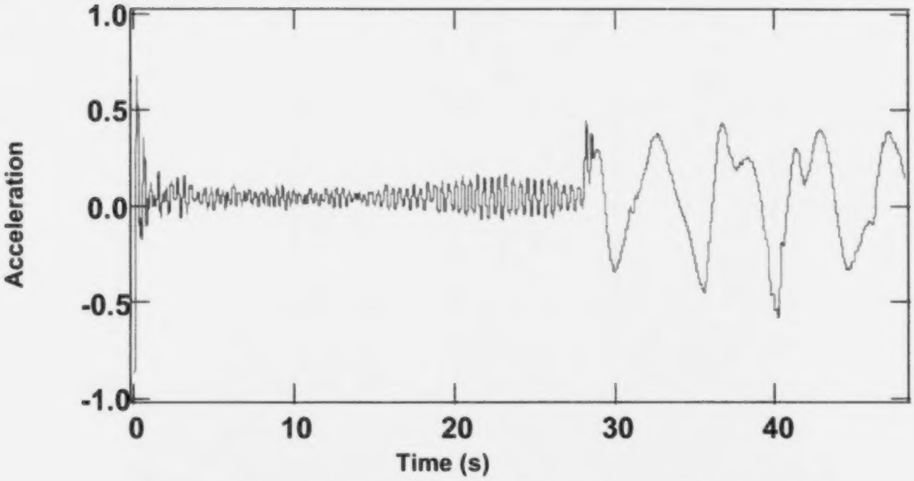


Figure 6.14 Z Acceleration Channel - M544G4_002

6.4.7 Seaworthiness Criteria; Progressive Setback

In section 3.0, the setback was described to be the distance that the TEMPSC was pushed back by its first wave encounter, relative to its splash-down point. In some cases the boat was pushed back to distances greater than that of the initial set back, due to subsequent waves. This is defined as progressive setback, and was found using the same graph as setback, which is the Z-axis channel versus the X-axis channel. As can be seen in Figure 6.15, the length of the arrows illustrates, approximately, the extent of setback and progressive setback. The shorter arrow shows the extent of setback, while the longer arrows indicate the progressive setback experienced by the vessel.

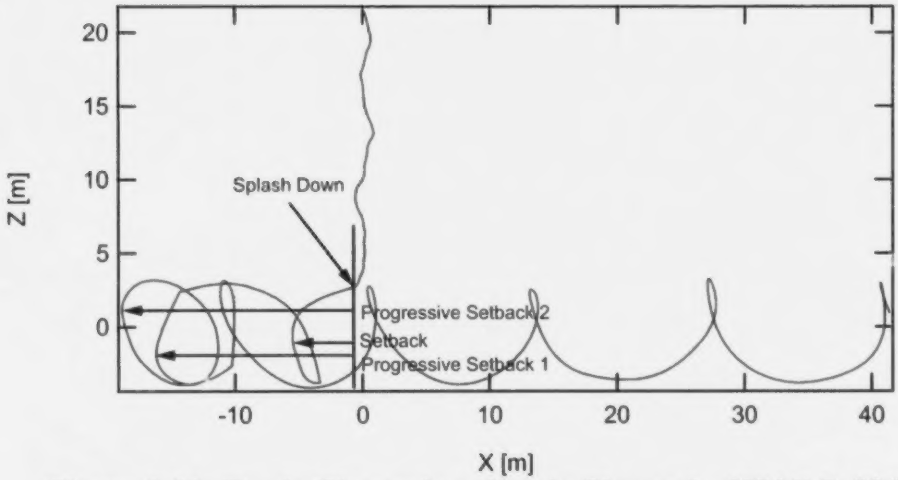


Figure 6.15 Z-axis Channel vs. X-axis Channel – M544L5_004

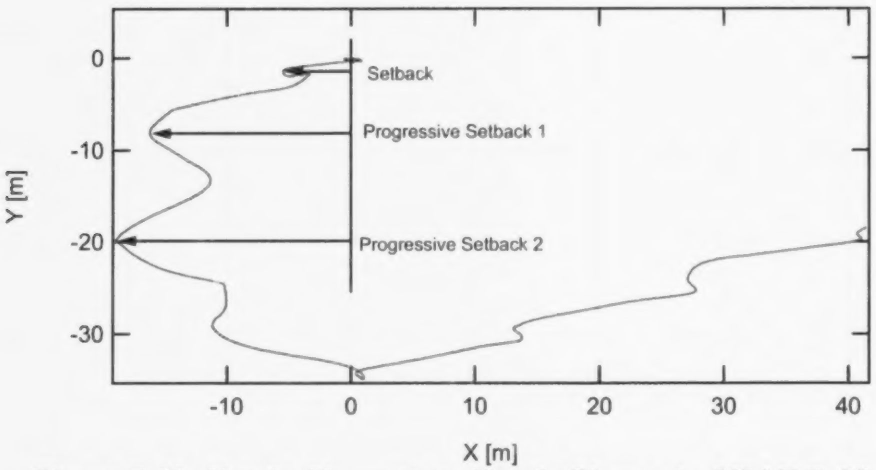


Figure 6.16 Y-axis Channel vs. X-axis Channel – M544L5_004

7.0 CONCLUSIONS

The work presented in this report aimed at evaluating: (1) the effects of environmental conditions on the performance of the twin-falls davit launched TEMPSC, and the same TEMPSC system fitted with a flexible boom deployed from a fixed platform; and (2) the effects of system configuration on performance. A total of 404 launches were analyzed. The evacuation system was an adequate model of the prototype as every effort was made to scale as many components as possible for the tests.

An increase in the severity of environmental conditions resulted in deterioration of the system's performance.

The variation of the TEMPSC's orientation resulted in fewer collisions with perpendicular launches than parallel.

In changing the payload, less of a setback was observed with a higher payload (100 percent), than a lower (70 percent).

The deviation of the deployment system resulted in a clear distinction between those tests run with or without the boom. Setback and path lengths were greatly increased without the added benefit of the boom in clearing the installation.

The variation of the wave steepness in testing seemed to have no real effect on the results collected.

The proposed zones (exclusion, splash-down and rescue) provided a very useful framework for the analysis and interpretation of the results. However, modifications have to be simple implemented in order to better capture the parallel launch. In the simplified framework of this test program, getting to the rescue border marked the end of the evacuation phase of the Escape-Evacuation-Rescue process.

REFERENCES

1. Simões Ré, A., and Veitch, B. 2001. "Experimental evaluation of lifeboat evacuation performance". *Transactions,* Society of Naval Architects and Marine Engineers, Vol. 109, 18 p.

2. Pelley, D., Simões Ré, A., and Veitch, B. 2002. "Evacuation by lifeboat in extreme seas". *Proceedings,* Safety at Sea Conference, 17 pp.

3. Simões Ré, A., Veitch, B., and Pelley, D. 2002. "Systematic investigation of lifeboat evacuation performance". To appear, *Transactions*, Society of Naval Architects and Marine Engineers, Vol. 110, 20 p.

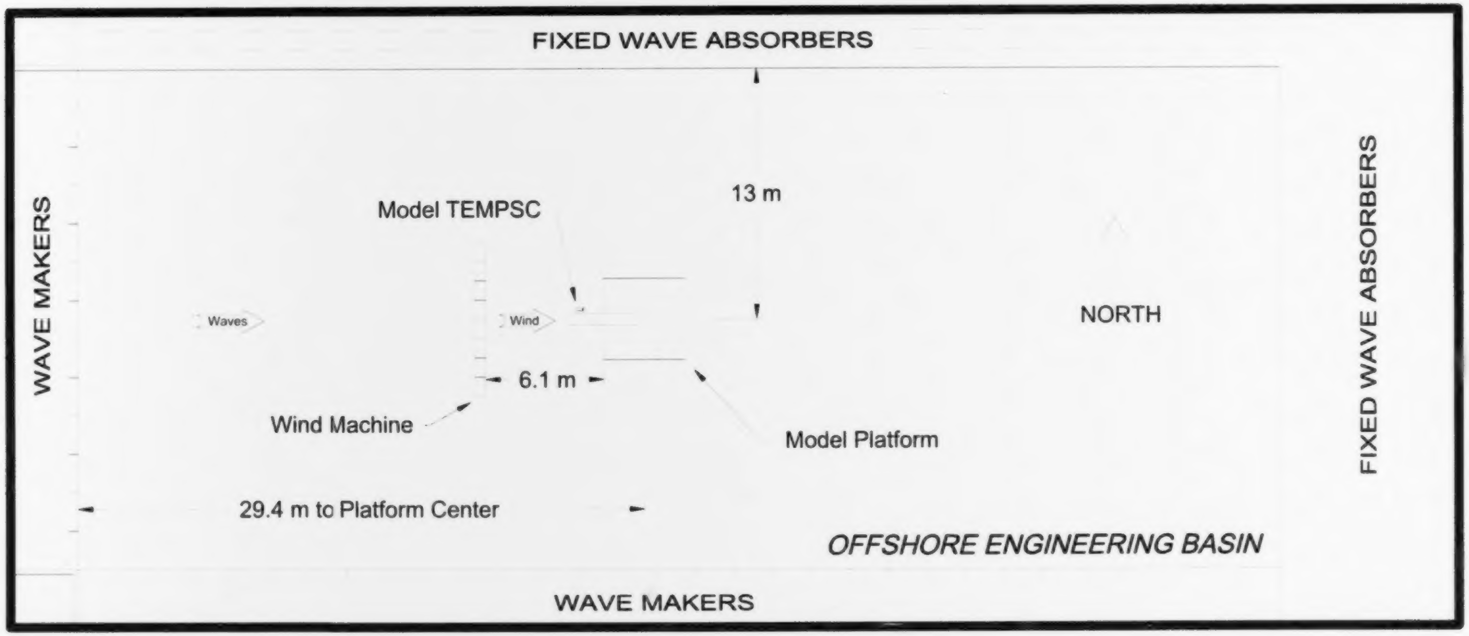
4. Simões Ré, A., and Veitch, B. 2002. *Escape, Evacuation, and Rescue*. EER Performance Based Standards Workshop, St. John's, Newfoundland.

5. Finch, T., Veitch, B., Simões Ré, A.J., Janes, G., and Sullivan, M. 2002. Life craft launch wave timer, or "Wavetimer". Patent application submitted (January 2002).

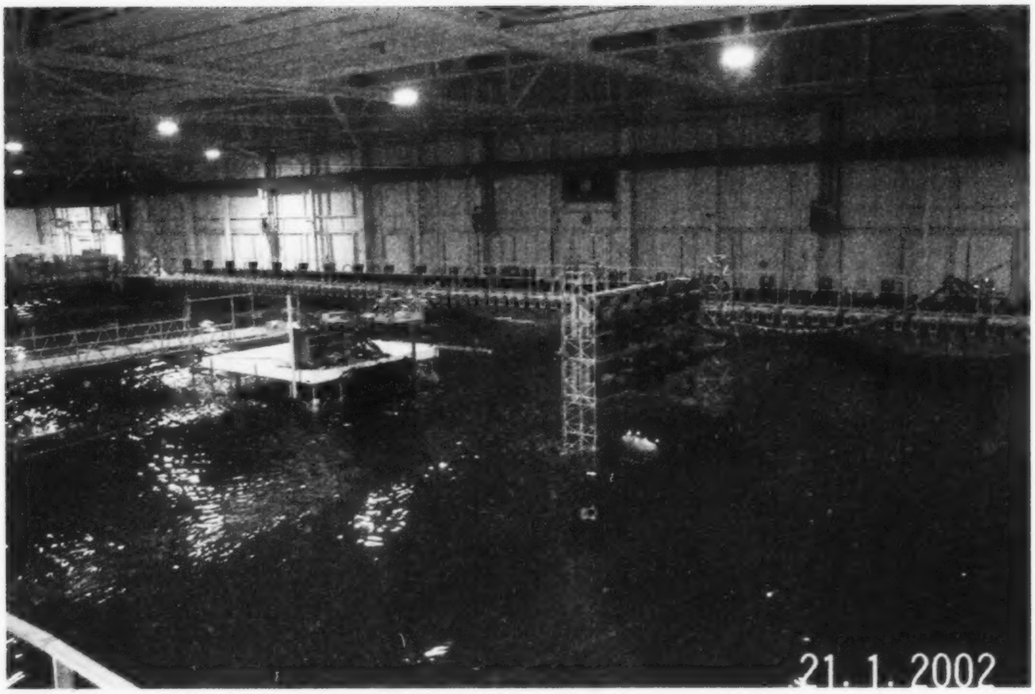
6. Lindroth, D. 2001. *TEMPSC Lifeboat Evacuation: Uncertainty Analysis,* Institute for Marine Dynamics, LM-2001-04, 17 pp.

Appendix 1

General Layout of the Offshore Engineering Basin


FIXED WAVE ABSORBERS
WAVE MAKERS
Model TEMPSC
13 m
Waves
Wind
NORTH
6.1 m
Wind Machine
Model Platform
FIXED WAVE ABSORBERS
29.4 m to Platform Center
OFFSHORE ENGINEERING BASIN
WAVE MAKERS

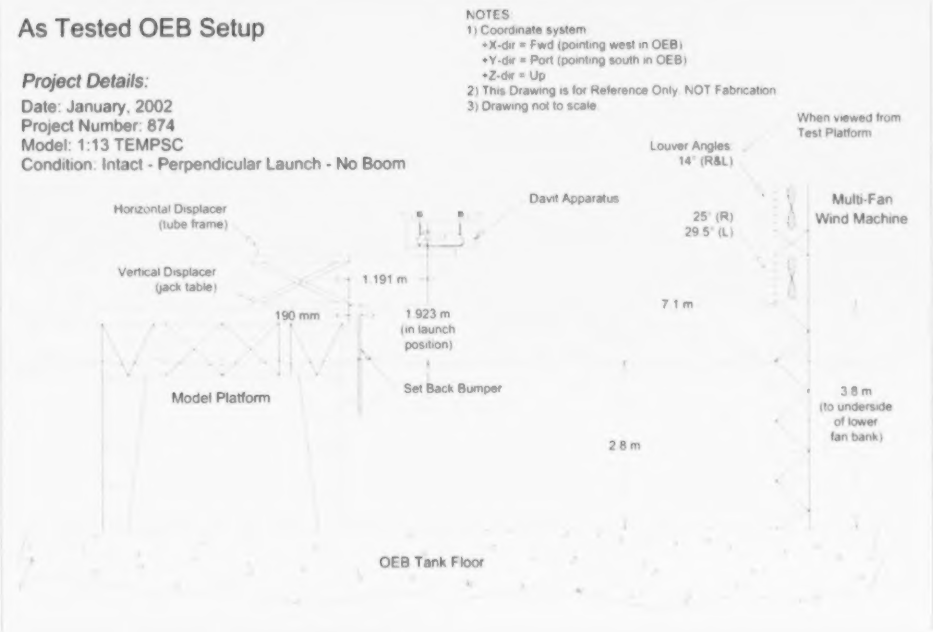
General Layout of the Offshore Engineering Basin



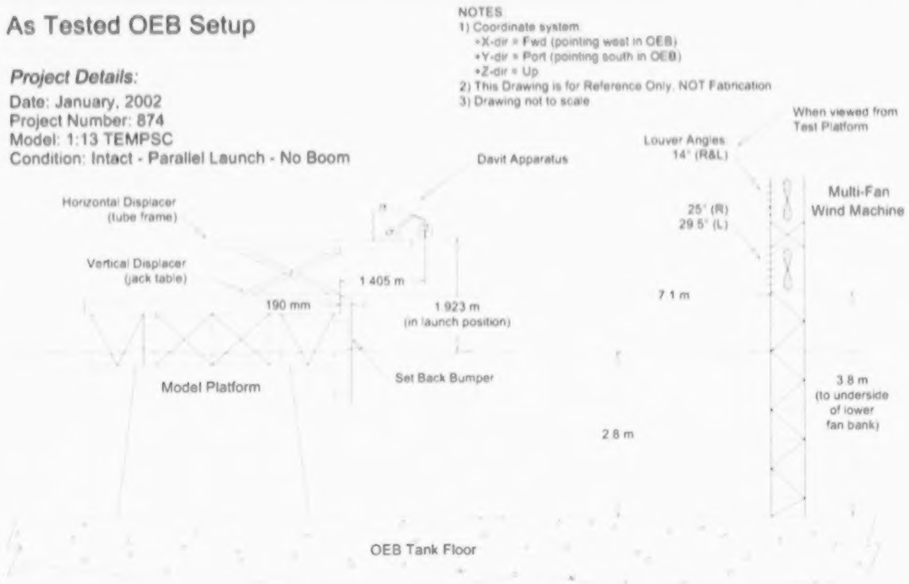
View of OEB showing model platform and wind machine

Appendix 2

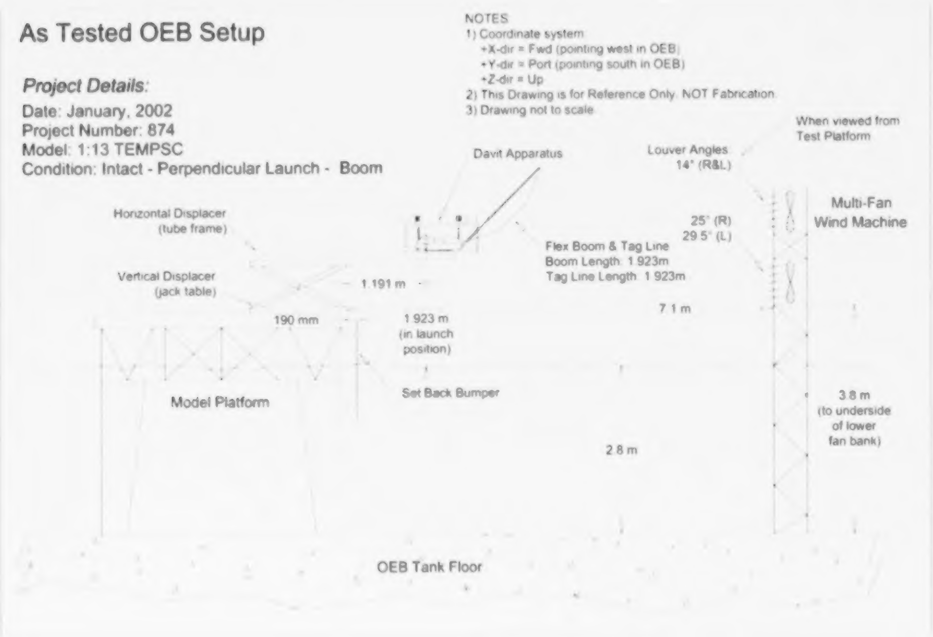
Fixed Platform Drawings


As Tested OEB Setup
Project Details:
Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Intact - Perpendicular Launch - No Boom
NOTES:
1) Coordinate system:
+X-dir = Fwd (pointing west in OEB)
+Y-dir = Port (pointing south in OEB)
+Z-dir = Up
2) This Drawing is for Reference Only. NOT Fabrication
3) Drawing not to scale
When viewed from Test Platform
Louver Angles: 14° (R&L)
Davit Apparatus
Multi-Fan Wind Machine
25° (R)
29.5° (L)
Horizontal Displacer (tube frame)
Vertical Displacer (jack table)
1.191 m
190 mm
1.923 m (in launch position)
7.1 m
Model Platform
Set Back Bumper
3.8 m (to underside of lower fan bank)
2.8 m
OEB Tank Floor

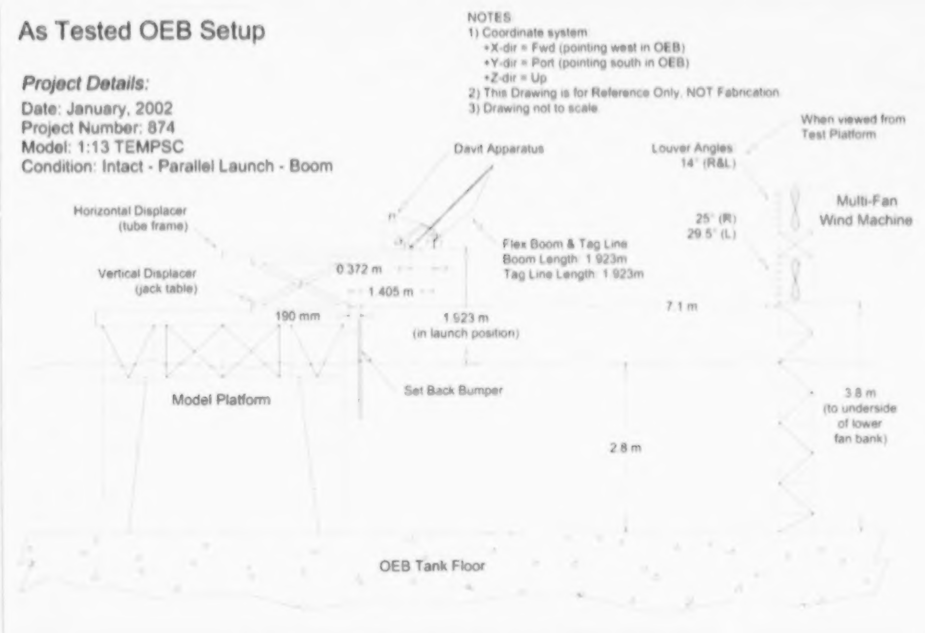
OEB Intact - Perpendicular - No Boom Setup


As Tested OEB Setup
Project Details:
Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Intact - Parallel Launch - No Boom
NOTES:
1) Coordinate system:
+X-dir = Fwd (pointing west in OEB)
+Y-dir = Port (pointing south in OEB)
+Z-dir = Up
2) This Drawing is for Reference Only. NOT Fabrication
3) Drawing not to scale
When viewed from Test Platform
Louver Angles: 14° (R&L)
Davit Apparatus
Multi-Fan Wind Machine
25° (R)
29.5° (L)
Horizontal Displacer (tube frame)
Vertical Displacer (jack table)
1.405 m
190 mm
1.923 m (in launch position)
7.1 m
Model Platform
Set Back Bumper
3.8 m (to underside of lower fan bank)
2.8 m
OEB Tank Floor

OEB Intact – Parallel – No Boom Setup


As Tested OEB Setup
Project Details:
Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Intact - Perpendicular Launch - Boom
NOTES
1) Coordinate system:
+X-dir = Fwd (pointing west in OEB)
+Y-dir = Port (pointing south in OEB)
+Z-dir = Up
2) This Drawing is for Reference Only. NOT Fabrication
3) Drawing not to scale
When viewed from Test Platform
Louver Angles: 14° (R&L)
Davit Apparatus
Multi-Fan Wind Machine
25° (R)
29.5° (L)
Horizontal Displacer (tube frame)
Flex Boom & Tag Line
Boom Length: 1.923m
Tag Line Length: 1.923m
Vertical Displacer (jack table)
1.191 m
7.1 m
190 mm
1.923 m (in launch position)
Set Back Bumper
Model Platform
3.8 m (to underside of lower fan bank)
2.8 m
OEB Tank Floor

OEB Intact - Perpendicular - Boom Setup


As Tested OEB Setup
Project Details:
Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Intact - Parallel Launch - Boom
NOTES
1) Coordinate system:
+X-dir = Fwd (pointing west in OEB)
+Y-dir = Port (pointing south in OEB)
+Z-dir = Up
2) This Drawing is for Reference Only. NOT Fabrication
3) Drawing not to scale
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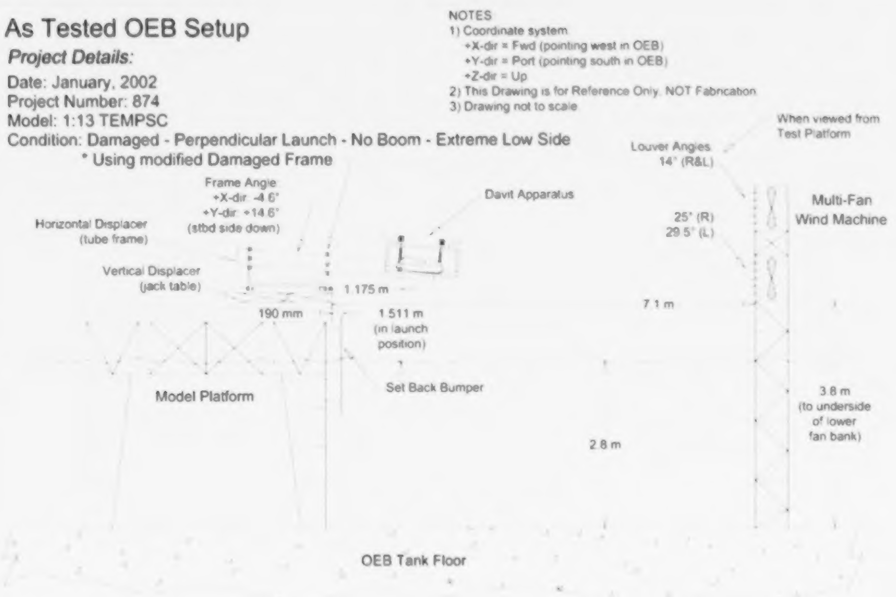
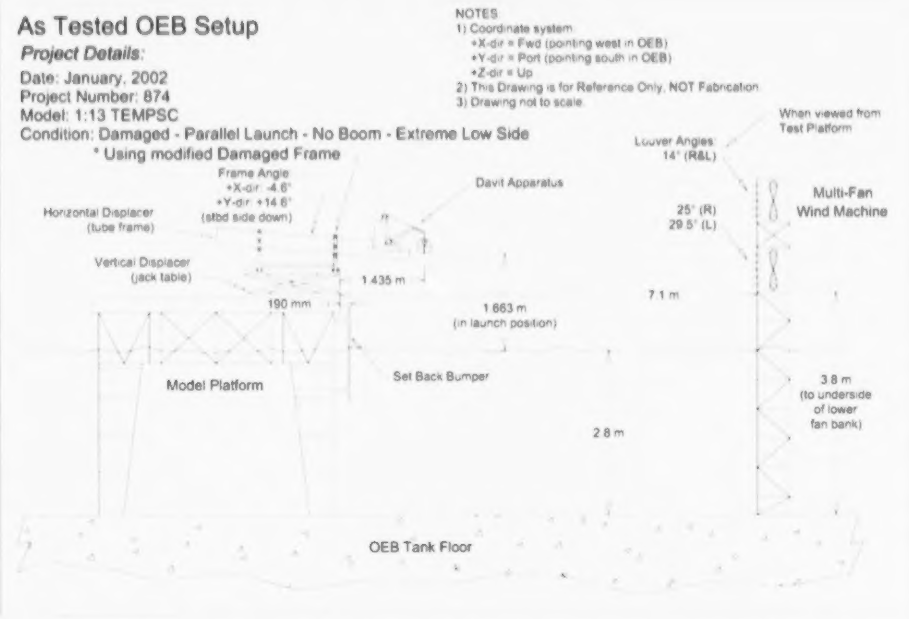
Louver Angles: 14° (R&L)
Davit Apparatus
Multi-Fan Wind Machine
25° (R)
29.5° (L)
Horizontal Displacer (tube frame)
Flex Boom & Tag Line
Boom Length: 1.923m
Tag Line Length: 1.923m
Vertical Displacer (jack table)
0.372 m
1.405 m
7.1 m
190 mm
1.923 m (in launch position)
Set Back Bumper
Model Platform
3.8 m (to underside of lower fan bank)
2.8 m
OEB Tank Floor

OEB Intact - Parallel - Boom Setup


As Tested OEB Setup
Project Details:
Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Damaged - Perpendicular Launch - No Boom - Extreme Low Side
* Using modified Damaged Frame
NOTES
1) Coordinate system
+X-dir = Fwd (pointing west in OEB)
+Y-dir = Port (pointing south in OEB)
+Z-dir = Up
2) This Drawing is for Reference Only. NOT Fabrication
3) Drawing not to scale
When viewed from Test Platform
Louver Angles 14° (R&L)
Frame Angle
+X-dir: -4.6°
+Y-dir: +14.6°
(stbd side down)
Davit Apparatus
Horizontal Displacer (tube frame)
25° (R)
29.5° (L)
Multi-Fan Wind Machine
Vertical Displacer (jack table)
1.175 m
190 mm
1.511 m (in launch position)
7.1 m
Model Platform
Set Back Bumper
3.8 m (to underside of lower fan bank)
2.8 m
OEB Tank Floor

OEB Extreme Low Side - Perpendicular - No Boom - Damaged Setup


As Tested OEB Setup
Project Details:
Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Damaged - Parallel Launch - No Boom - Extreme Low Side
* Using modified Damaged Frame
NOTES
1) Coordinate system
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+Y-dir = Port (pointing south in OEB)
+Z-dir = Up
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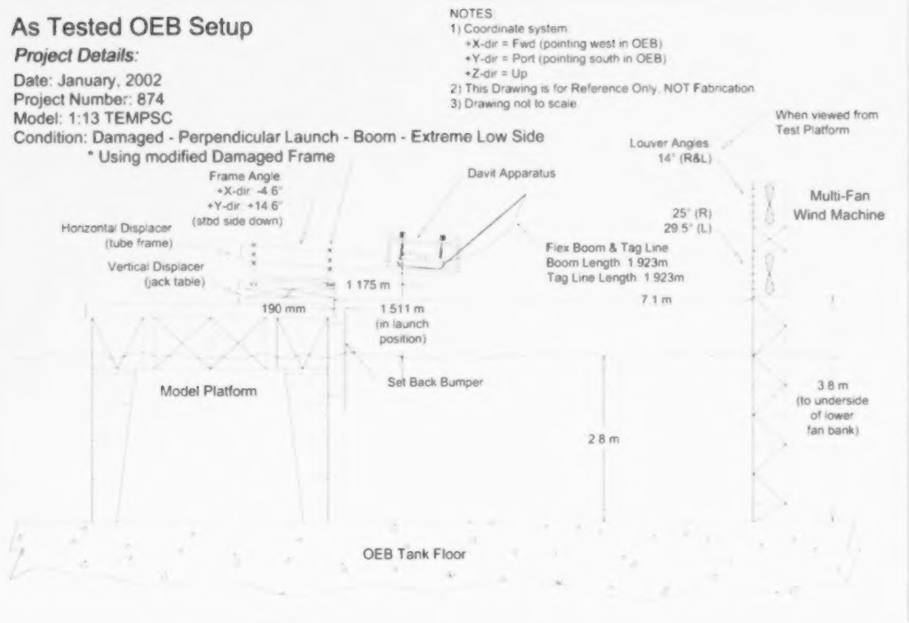
3) Drawing not to scale.
When viewed from Test Platform
Louver Angles 14° (R&L)
Frame Angle
+X-dir: -4.6°
+Y-dir: +14.6°
(stbd side down)
Davit Apparatus
Horizontal Displacer (tube frame)
25° (R)
29.5° (L)
Multi-Fan Wind Machine
Vertical Displacer (jack table)
1.435 m
190 mm
1.663 m (in launch position)
7.1 m
Model Platform
Set Back Bumper
3.8 m (to underside of lower fan bank)
2.8 m
OEB Tank Floor

OEB Extreme Low Side - Parallel - No Boom - Damaged Setup


As Tested OEB Setup

Project Details:

Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Damaged - Perpendicular Launch - Boom - Extreme Low Side
* Using modified Damaged Frame

NOTES:
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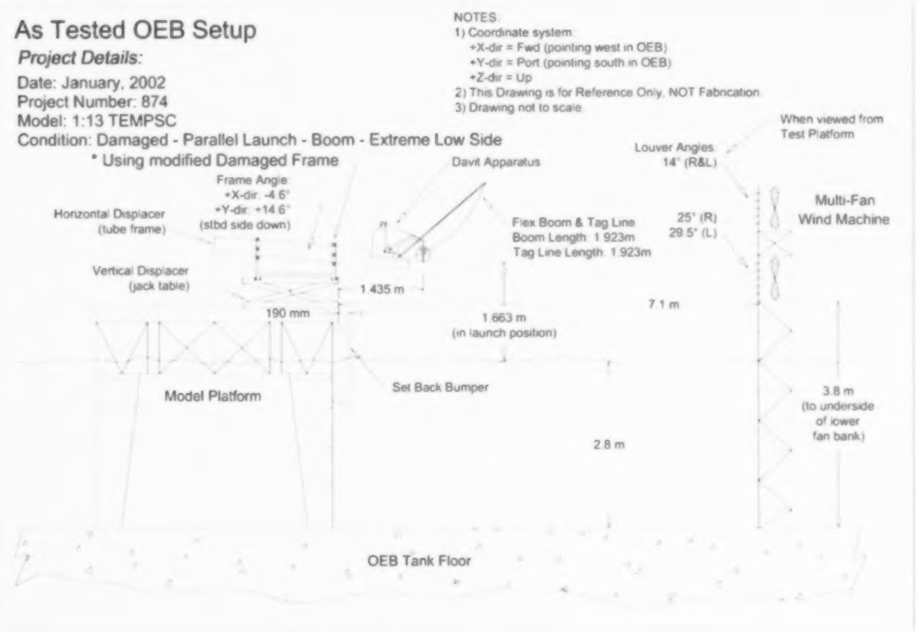
3) Drawing not to scale

When viewed from Test Platform
Louver Angles 14° (R&L)
Frame Angle
+X-dir -4.6°
+Y-dir +14.6°
(stbd side down)
Davit Apparatus
Multi-Fan Wind Machine
25° (R)
29.5° (L)
Horizontal Displacer (tube frame)
Flex Boom & Tag Line
Boom Length 1.923m
Tag Line Length 1.923m
Vertical Displacer (jack table)
1.175 m
7.1 m
190 mm
1.511 m (in launch position)
Set Back Bumper
Model Platform
3.8 m (to underside of lower fan bank)
2.8 m
OEB Tank Floor

OEB Extreme Low Side - Perpendicular - Boom - Damaged Setup


As Tested OEB Setup

Project Details:

Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Damaged - Parallel Launch - Boom - Extreme Low Side
* Using modified Damaged Frame

NOTES:
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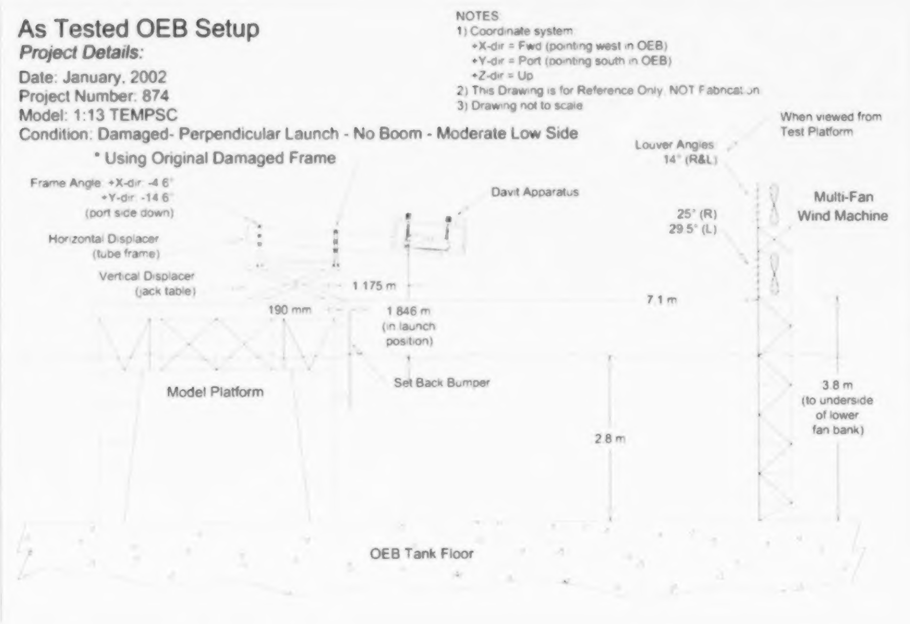
+Z-dir = Up
2) This Drawing is for Reference Only, NOT Fabrication
3) Drawing not to scale

When viewed from Test Platform
Louver Angles 14° (R&L)
Davit Apparatus
Frame Angle
+X-dir -4.6°
+Y-dir +14.6°
(stbd side down)
Multi-Fan Wind Machine
Horizontal Displacer (tube frame)
Flex Boom & Tag Line
Boom Length 1.923m
Tag Line Length 1.923m
25° (R)
29.5° (L)
Vertical Displacer (jack table)
1.435 m
7.1 m
190 mm
1.663 m (in launch position)
Set Back Bumper
Model Platform
3.8 m (to underside of lower fan bank)
2.8 m
OEB Tank Floor

OEB Extreme Low Side - Parallel - Boom - Damaged Setup



As Tested OEB Setup

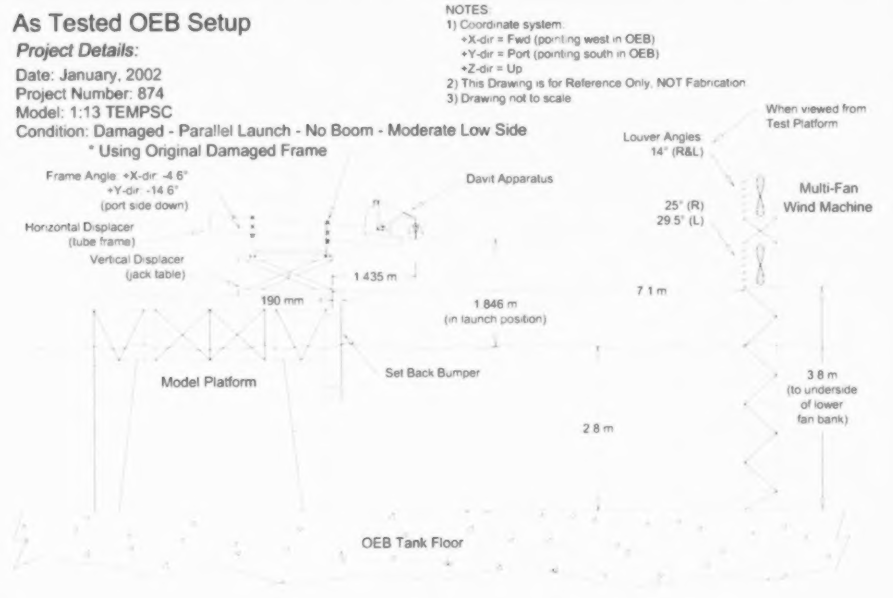
Project Details:

Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Damaged- Perpendicular Launch - No Boom - Moderate Low Side
* Using Original Damaged Frame

NOTES:
1) Coordinate system:
+X-dir = Fwd (pointing west in OEB)
+Y-dir = Port (pointing south in OEB)
+Z-dir = Up
2) This Drawing is for Reference Only, NOT Fabrication
3) Drawing not to scale

Frame Angle: +X-dir: -4.6°
+Y-dir: -14.6°
(port side down)
Horizontal Displacer
(tube frame)
Vertical Displacer
(jack table)
Davit Apparatus
Louver Angles
14° (R&L)
When viewed from Test Platform
Multi-Fan Wind Machine
25° (R)
29.5° (L)
1.175 m
190 mm
1.846 m
(in launch position)
7.1 m
Set Back Bumper
Model Platform
3.8 m
(to underside of lower fan bank)
2.8 m
OEB Tank Floor

OEB Moderate Low Side - Perpendicular - No Boom - Damaged Setup



As Tested OEB Setup

Project Details:

Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Damaged - Parallel Launch - No Boom - Moderate Low Side
* Using Original Damaged Frame

NOTES:
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Louver Angles
14° (R&L)
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Multi-Fan Wind Machine
25° (R)
29.5° (L)
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1.846 m
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7.1 m
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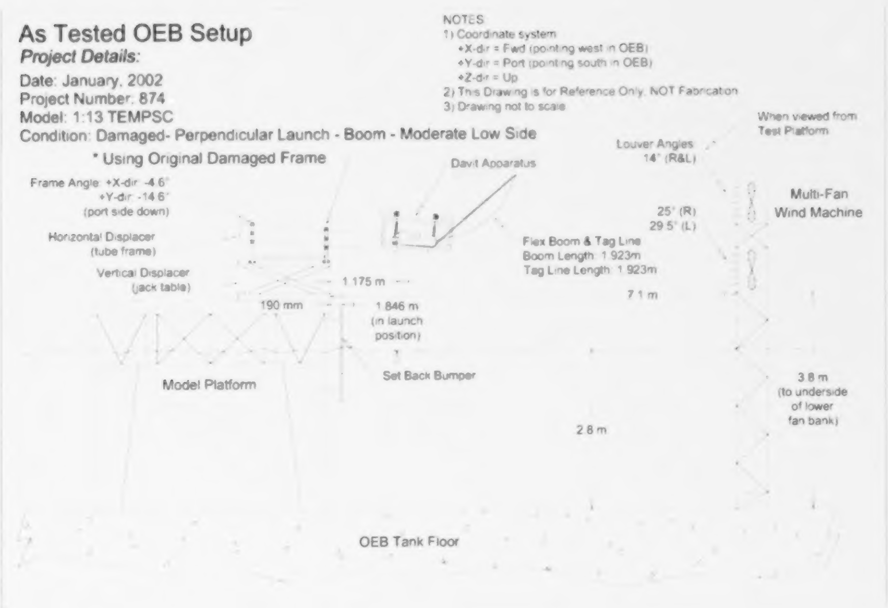
Model Platform
3.8 m
(to underside of lower fan bank)
2.8 m
OEB Tank Floor

OEB Moderate Low Side - Parallel - No Boom - Damaged Setup



As Tested OEB Setup

Project Details:

Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Damaged- Perpendicular Launch - Boom - Moderate Low Side
* Using Original Damaged Frame

NOTES
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+X-dir = Fwd (pointing west in OEB)
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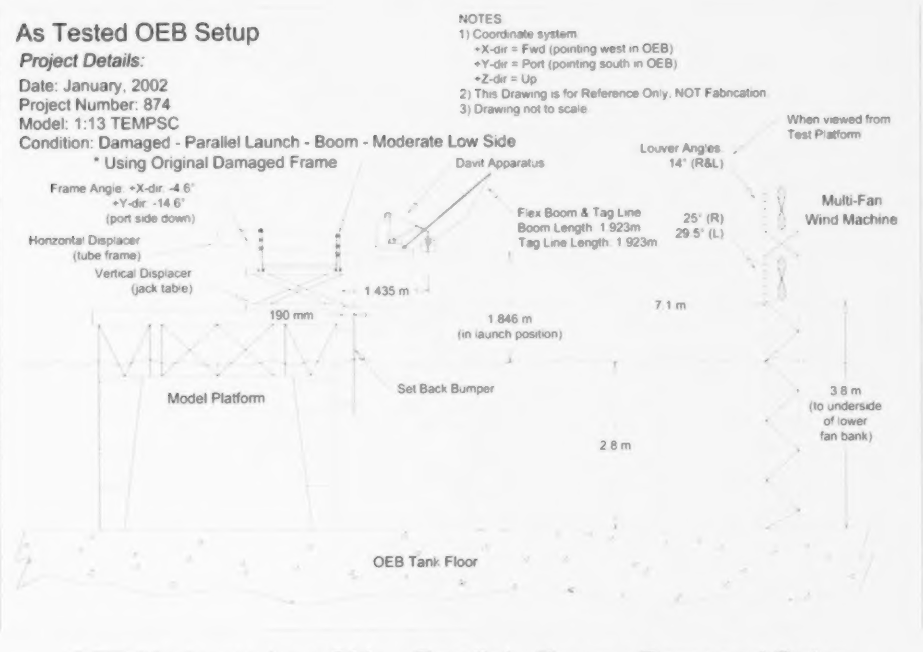
+Y-dir: -14.6°
(port side down)
Horizontal Displacer
(tube frame)
Vertical Displacer
(jack table)
Davit Apparatus
Flex Boom & Tag Line
Boom Length: 1.923m
Tag Line Length: 1.923m
Louver Angles
14° (R&L)
When viewed from
Test Platform
25° (R)
29.5° (L)
Multi-Fan
Wind Machine
1.175 m
190 mm
1.846 m
(in launch
position)
7.1 m
Set Back Bumper
Model Platform
3.8 m
(to underside
of lower
fan bank)
2.8 m
OEB Tank Floor

OEB Moderate Low Side - Perpendicular - Boom - Damaged Setup



As Tested OEB Setup

Project Details:

Date: January, 2002
Project Number: 874
Model: 1:13 TEMPSC
Condition: Damaged - Parallel Launch - Boom - Moderate Low Side
* Using Original Damaged Frame

NOTES
1) Coordinate system
+X-dir = Fwd (pointing west in OEB)
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3) Drawing not to scale

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Flex Boom & Tag Line
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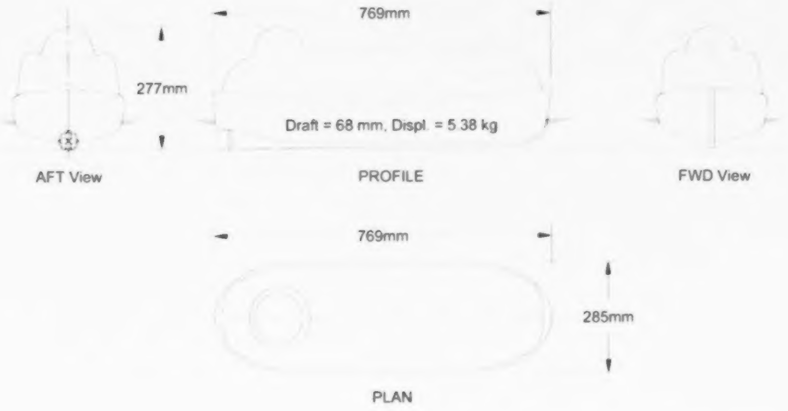
7.1 m
1.846 m
(in launch position)
Set Back Bumper
Model Platform
3.8 m
(to underside
of lower
fan bank)
2.8 m
OEB Tank Floor

OEB Moderate Low Side - Parallel - Boom - Damaged Setup

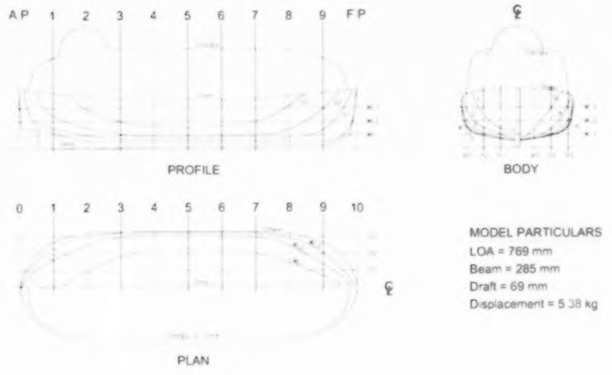
Appendix 3

TEMPSC Drawings, Hydrostatics, Mass Properties

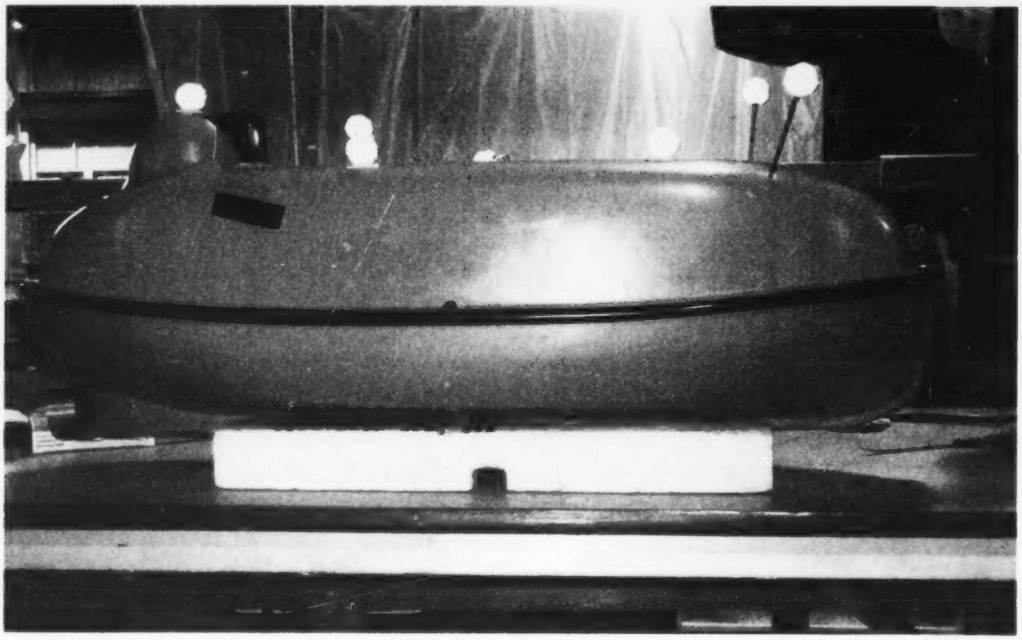
1:13 TEMPSC Model


769mm
277mm
Draft = 68 mm, Displ. = 5.38 kg
AFT View
PROFILE
FWD View
769mm
285mm
PLAN

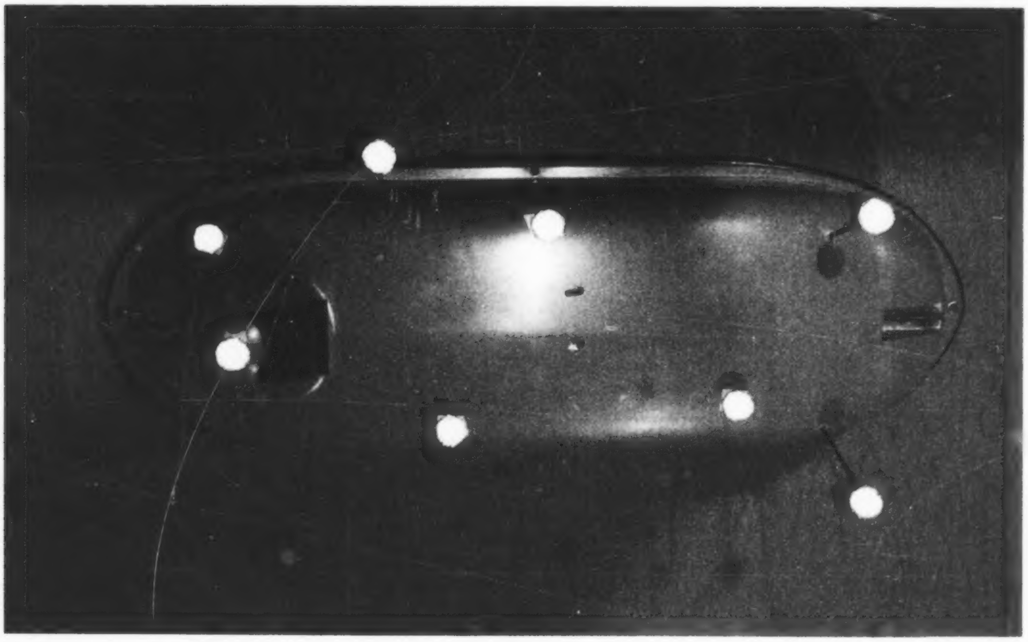
1:13 TEMPSC Lines Plan


A P
1
2
3
4
5
6
7
8
9
F P
℄
PROFILE
BODY
0
1
2
3
4
5
6
7
8
9
10
℄
PLAN

MODEL PARTICULARS
LOA = 769 mm
Beam = 285 mm
Draft = 69 mm
Displacement = 5.38 kg



Model Profile



Model Plan

Hydrostatics

PARAMETER		PROTOTYPE	1/13 SCALE MODEL
Length Overall	LOA	10.0 m	780 mm
Beam Overall	BOA	3.7 m	259 mm
Height Overall	HOA	3.6 m	276 mm
Draft	T	0.894 m	66 mm
Displacement	Δ	12, 135 kg	5.38 kg
Wetted Surface Area	S	32.1 m^2	0.19 m^2
Block Coefficient	C_B	0.422	
Midship Coefficient	C_X	0.598	
Prismatic Coefficient	C_P	0.709	
Waterplane Coefficient	C_W	0.799	
Length to Beam Ratio	L/B	2.703	
Beam to Draft Ratio	B/T	4.302	
NOZZLE			
Outside Diameter	OD	500 mm	46 mm
Length	L	300 mm	25 mm
PROPELLER			
Diameter	D	450 mm	39.6 mm

Results of the Swing Test - Model Swung in Pitch

PERFORMED BY Jason Dawe Kerry Genge

PROJECT PARTICULARS	
PROJECT DESCRIPTION	EER
PROJECT NUMBER	Pj874
MODEL DESCRIPTION	TEMPSC
MODEL NUMBER	544
DATE	29-May-03

MODEL PARTICULARS	
LBP (m)	0.780
LOA (m)	0.780
BEAM (m)	0.259
DEPTH MLD (m) (max)	0.276
DEPTH MLD (m) (to canopy)	0.225
DRAFT (m)	0.066
DISPLACEMENT (kg)	5.380

TARGET VALUES	
LCG (m) wrt AP	0.383
VCG (m) wrt Baseline	0.100
Radius of Gyration (m)	0.188

VALUES TO BE INPUTED

Acceleration due to gravity (g) =	9.807
Measured mass of model (kg) =	5.380

LIST OF TERMINOLOGY

KE = Knife edge
GoBo = Restoring moment of frame without model
GsBs = Restoring moment of frame model, and trimming mass
GcBc = Restoring moment for trimming mass used to level model
GmBm = Restoring moment for the model
Jo = Mass moment of inertia of frame without model
Js = Mass moment of inertia of frame with model, and trimming mass
Jc = Mass moment of inertia of trimming mass used to level model
Jm(ke) = Mass moment of inertia of model about the knife edge
Jm(vcg) = Mass moment of inertia of model about the VCG
K = Radius of Gyration
T = Period

ESTABLISHING RESTORING MOMENT & MASS MOMENT OF INERTIA FOR FRAME

*GoBo=(Z+L/TAN θ)*P*g=* 6.198
*Jo=(T/2pie)^2*GoBo=* 0.300

Applied Load {P} (kg)=	0.396
Transverse distance to applied load from KE* {L} (m)=	0.176
Vertical distance to applied load from KE {Z} (m)=	0.023

Inclining Angles {θ} (Degrees)

	Actual Angle (Deg.)	Change in Angle (Deg.)
Initial Angle	-1.320	
Apply Load	5.110	6.430
Remove Load	-1.320	6.430
Apply Load	-7.650	6.330
Remove Load	-1.300	6.350
	Mean Angle=	6.385

Period (T) of Frame

Cycles	Time (sec)	Period (sec)
10	13.710	1.371
10	13.900	1.390
10	13.870	1.387
	Mean=	1.383

ESTABLISHING RESTORING MOMENT & MASS MOMENT OF INERTIA FOR FRAME AND MODEL

GsBs=(Z+L/TAN θ)*P*g=	18.866
Js=(T/2pie)^2*GsBs=	0.772

Applied Load {P} (kg)=	1.044
Transverse distance to applied load from KE* {L} (m)=	0.176
Vertical distance to applied load from KE {Z} (m)=	0.023

Inclining Angles {θ} (Degrees)

	Actual Angle (Deg.)	Change in Angle (Deg.)
Initial Angle	0.970	
Apply Load	6.500	5.530
Remove Load	0.970	5.530
Apply Load	-4.540	5.510
Remove Load	0.990	5.530
	Mean Angle=	5.525

Period (T) of Frame

Cycles	Time (sec)	Period (sec)
10	12.780	1.278
10	12.560	1.256
10	12.780	1.278
	Mean=	1.271

CORRECTION FOR TRIMMING MASS

GcBc=mass*distance*g=	0.000
Jc=mass*distance^2=	0.000

Triming Mass (Kg)=	
VCG of Trim mass wrt KE (m)=	
TCG of Trim mass wrt KE (m)=	

ESTABLISHING RESTORING MOMENT & MASS MOMENT OF INERTIA FOR MODEL

GmBm=GsBs-GoBo-GcBc=	12.668
Jm(ke)=Js-Jo-Jc =	0.471

VCG OF MODEL

distance from baseline to KE (m) = 0.343

*CG wrt KE=GmBm/(displacement*g)=* 0.240

VCG of model from baseline = 0.103

MASS MOMENT OF INERTIA OF MODEL ABOUT VCG OF MODEL

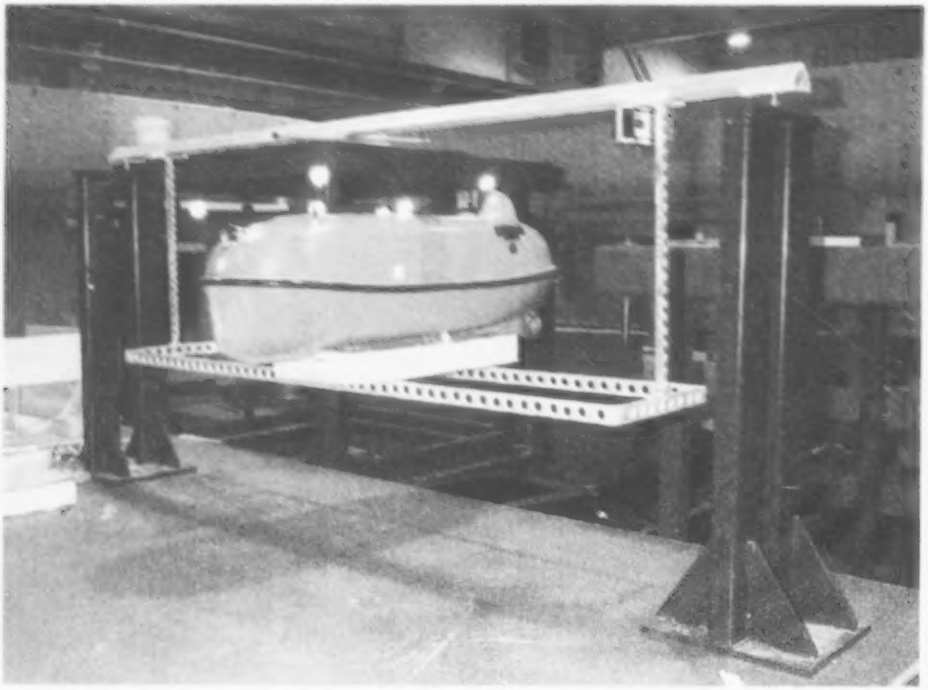
*Jm(vcg)=Jm(ke)-displacement*dist.^2=* 0.161

RADIUS OF GYRATION OF MODEL

K=(Jm(vcg)/displacement)^0.5 = 0.173

SUMMARY

	TARGET	ACTUAL	PERCENT ERROR
LCG (m) wrt AP	0.383	0.383	0.00
VCG (m) wrt Baseline	0.100	0.103	2.90
PITCH Radius of Gyration (m)	0.188	0.173	-7.90



Model Swung in Pitch

Results of the Swing Test - Model Swung in Roll

PERFORMED BY	Jason Dawe	Kerry Genge

PROJECT PARTICULARS

PROJECT DESCRIPTION	EER
PROJECT NUMBER	Pj874
MODEL DESCRIPTION	TEMPSC
MODEL NUMBER	544
DATE	29-May-03

MODEL PARTICULARS

LBP (m)	0.780
LOA (m)	0.780
BEAM (m)	0.259
DEPTH MLD (m) (max)	0.276
DEPTH MLD (m) (to canopy)	0.225
DRAFT (m)	0.066
DISPLACEMENT (kg)	5.380

TARGET VALUES

LCG (m) wrt AP	0.383
VCG (m) wrt Baseline	0.100
Radius of Gyration (m)	0.101

VALUES TO BE INPUTED

Acceleration due to gravity (g) =	9.807
Measured mass of model (kg) =	5.380

LIST OF TERMINOLOGY

KE = Knife edge
GoBo = Restoring moment of frame without model
GsBs = Restoring moment of frame model, and trimming mass
GcBc = Restoring moment for trimming mass used to level model
GmBm = Restoring moment for the model
Jo = Mass moment of inertia of frame without model
Js = Mass moment of inertia of frame with model, and trimming mass
Jc = Mass moment of inertia of trimming mass used to level model
Jm(ke) = Mass moment of inertia of model about the knife edge
Jm(vcg) = Mass moment of inertia of model about the VCG
K = Radius of Gyration
T = Period

ESTABLISHING RESTORING MOMENT & MASS MOMENT OF INERTIA FOR FRAME

GoBo=(Z+L/TAN θ)*P*g=	6.187
Jo=(T/2pie)^2*GoBo=	0.297

Applied Load {P} (kg)=	0.399
Transverse distance to applied load from KE* {L} (m)=	0.176
Vertical distance to applied load from KE {Z} (m)=	0.023

Inclining Angles {θ} (Degrees)

	Actual Angle (Deg.)	Change in Angle (Deg.)
Initial Angle	1.210	
Apply Load	-5.210	6.420
Remove Load	1.220	6.430
Apply Load	7.670	6.450
Remove Load	1.190	6.480
	Mean Angle=	6.445

Period (T) of Frame

Cycles	Time (sec)	Period (sec)
10	13.770	1.377
10	13.670	1.367
10	13.850	1.385
	Mean=	1.376

ESTABLISHING RESTORING MOMENT & MASS MOMENT OF INERTIA FOR FRAME AND MODEL

GsBs=(Z+L/TAN θ)*P*g= 18.370

Js=(T/2pie)^2*GsBs= 0.644

Applied Load {P} (kg)=	1.044
Transverse distance to applied load from KE* {L} (m)=	0.176
Vertical distance to applied load from KE {Z} (m)=	0.023

Inclining Angles {θ} (Degrees)

	Actual Angle (Deg.)	Change in Angle (Deg.)
Initial Angle	-0.990	
Apply Load	4.700	5.690
Remove Load	-0.970	5.670
Apply Load	-6.650	5.680
Remove Load	-0.990	5.660
	Mean Angle=	5.675

Period (T) of Frame

Cycles	Time (sec)	Period (sec)
10	11.840	1.184
10	11.750	1.175
10	11.690	1.169
	Mean=	1.176

CORRECTION FOR TRIMMING MASS

GcBc=mass*distance*g= 0.000

Jc=mass*distance^2= 0.000

Triming Mass (Kg)=	
VCG of Trim mass wrt KE (m)=	
TCG of Trim mass wrt KE (m)=	

ESTABLISHING RESTORING MOMENT & MASS MOMENT OF INERTIA FOR MODEL

GmBm=GsBs-GoBo-GcBc= 12.183

Jm(ke)=Js-Jo-Jc = 0.347

VCG OF MODEL

distance from baseline to KE (m) = 0.343

*CG wrt KE=GmBm/(displacement*g)=* 0.231

VCG of model from baseline = 0.112

MASS MOMENT OF INERTIA OF MODEL ABOUT VCG OF MODEL

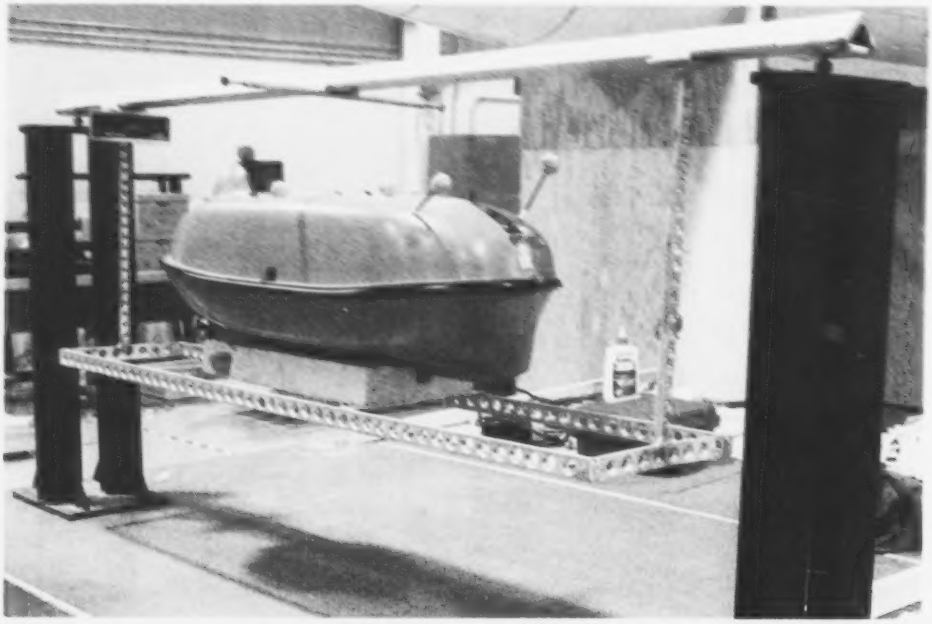
*Jm(vcg)=Jm(ke)-displacement*dist.^2=* 0.060

RADIUS OF GYRATION OF MODEL

K=(Jm(vcg)/displacement)^0.5 = 0.105

SUMMARY

	TARGET	ACTUAL	PERCENT ERROR
LCG (m) wrt AP	0.383	0.383	0.00
VCG (m) wrt Baseline	0.100	0.112	12.09
Radius of Gyration (m	0.101	0.105	4.38



Model Swung in Roll

Appendix 4

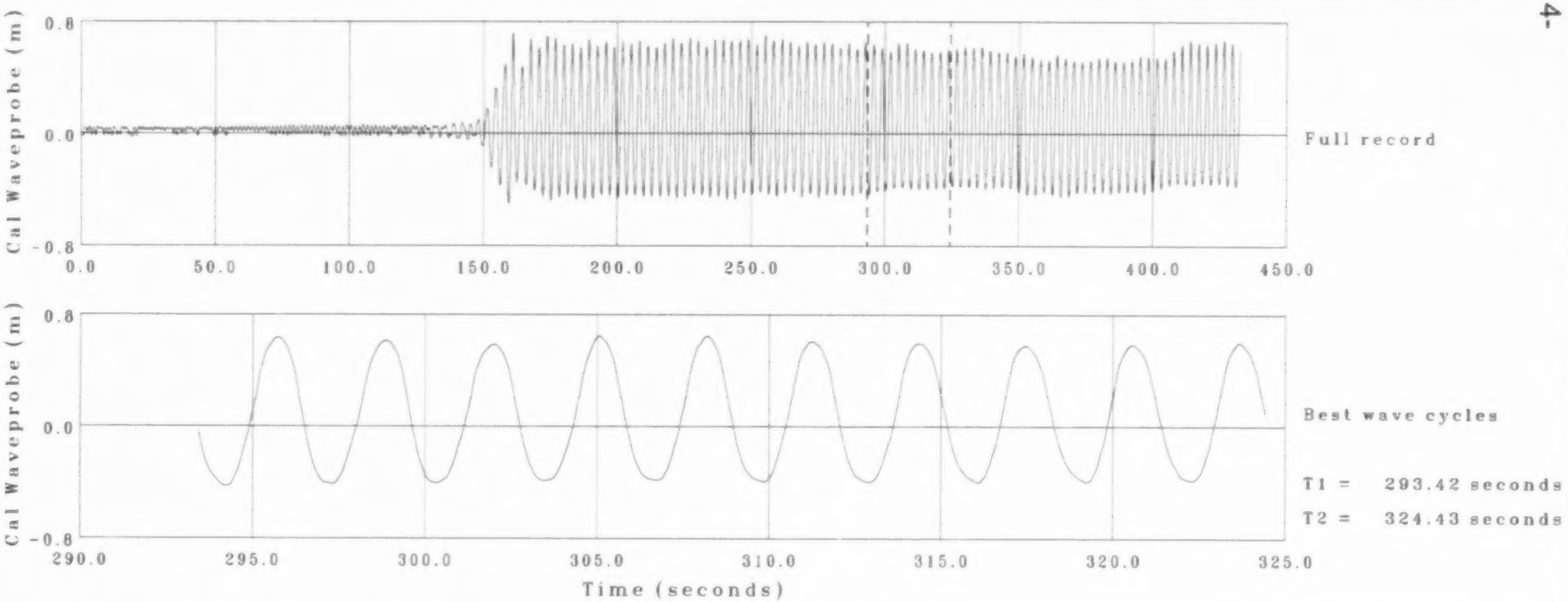
Wave Calibrations

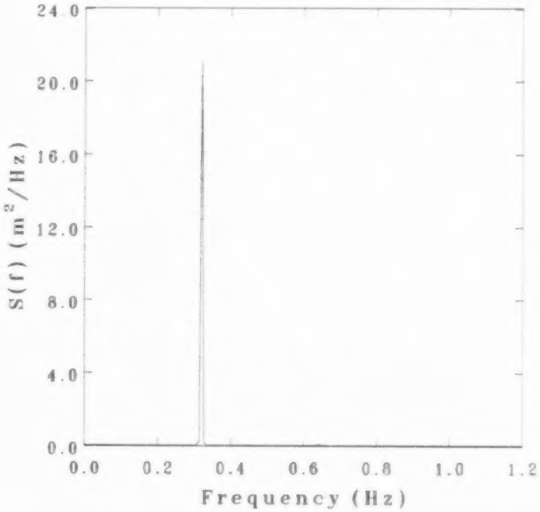
Evac Systems
Regular Wave Matching

NRC-IMD

Analyzed: 24-JUL-2002 14:00:42
Acquired: 26-SEP-2001 16:18:15

4-





Full record wave parameters:

Average wave height = 1.07 m

Average wave period = 3.12 seconds

Best wave cycles parameters:		Target / (Tolerance):
Average wave height	= 1.00 m	1.01 m
Average wave period	= 3.12 seconds	3.12 seconds
Deviation from target height	= 0.62 %	(5.0 %)
Wave height stability	= 6.90 %	(5.0 %)
Wave crest stability	= 6.54 %	(2.5 %)

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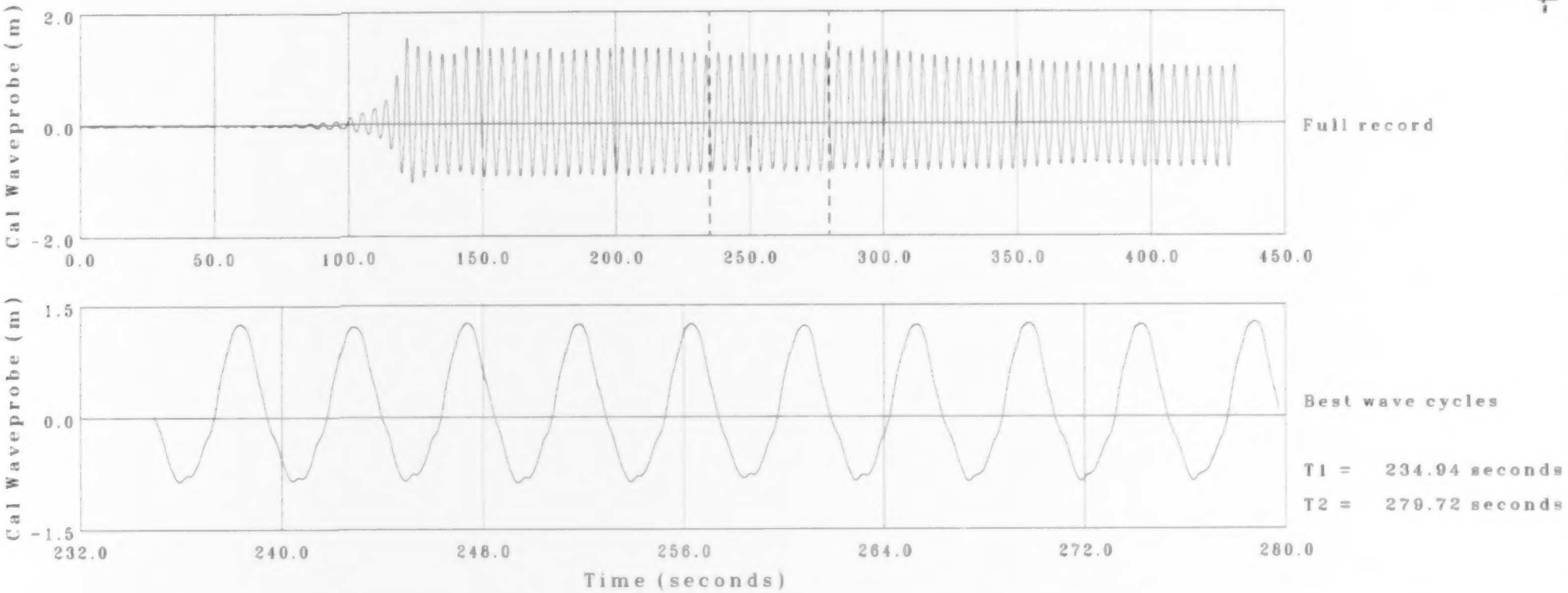
Figure A2 W2_13_15_001

Evac Systems
Regular Wave Matching

NRC-IMD

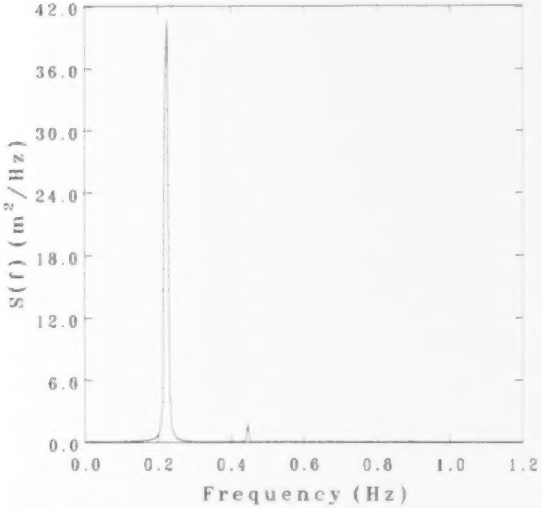
Analyzed: 24-JUL-2002 14:02:24
Acquired: 27-SEP-2001 09:49:40

4-



T1 = 234.94 seconds

T2 = 279.72 seconds



Full record wave parameters:		
Average wave height	= 2.20 m	
Average wave period	= 4.49 seconds	
		Target /
Best wave cycles parameters:		(Tolerance):
Average wave height	= 2.10 m	2.10 m
Average wave period	= 4.48 seconds	4.49 seconds
Deviation from target height	= 0.05 %	(5.0 %)
Wave height stability	= 4.81 %	(5.0 %)
Wave crest stability	= 1.42 %	(2.5 %)

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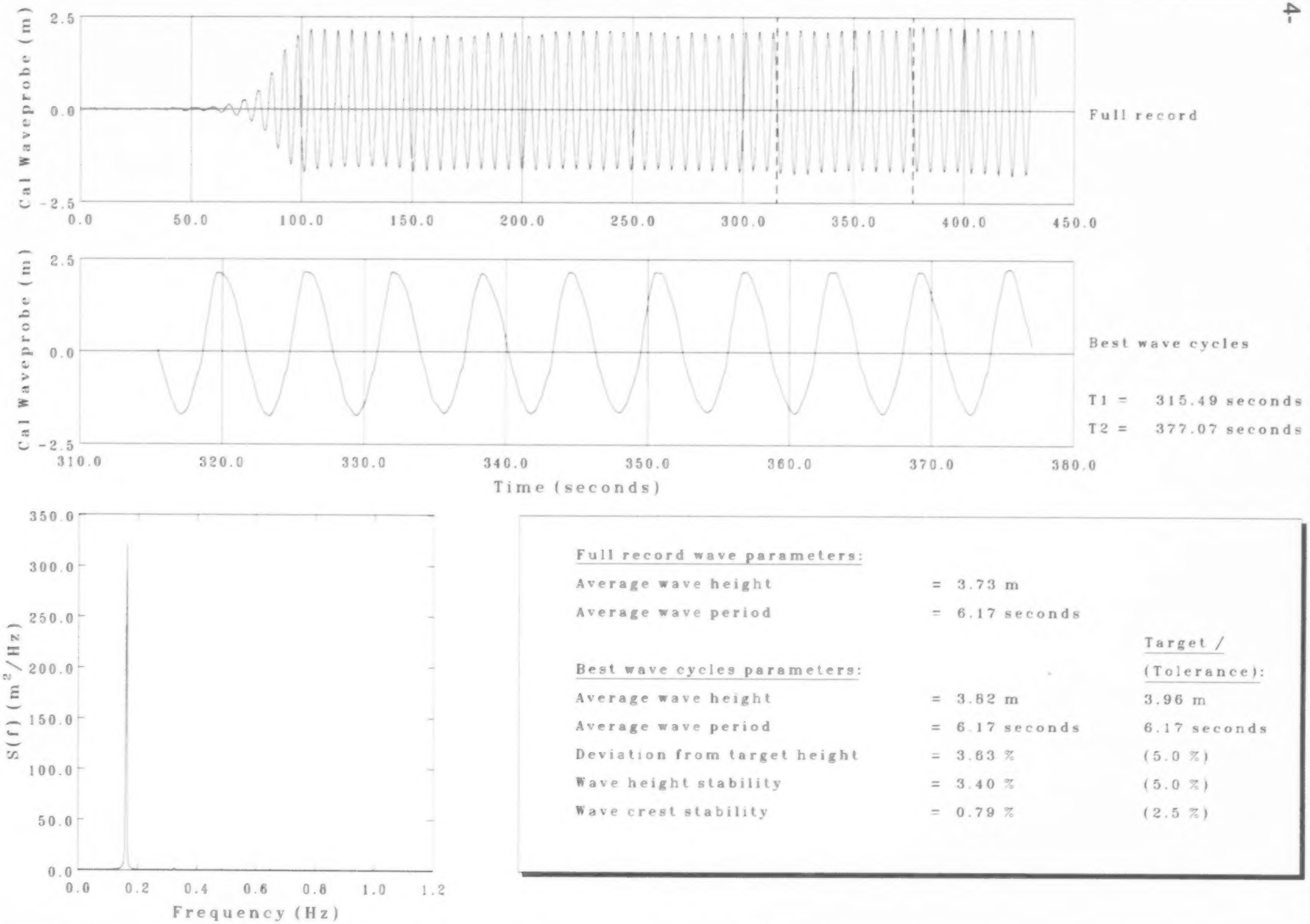
Figure A2 W3_13_15_001

Evac Systems
Regular Wave Matching

NRC-IMD

Analyzed: 24-JUL-2002 14:03:43
Acquired: 27-SEP-2001 11:10:18

4-



Full record wave parameters:		
Average wave height	= 3.73 m	
Average wave period	= 6.17 seconds	
		Target /
Best wave cycles parameters:		(Tolerance):
Average wave height	= 3.82 m	3.96 m
Average wave period	= 6.17 seconds	6.17 seconds
Deviation from target height	= 3.63 %	(5.0 %)
Wave height stability	= 3.40 %	(5.0 %)
Wave crest stability	= 0.79 %	(2.5 %)

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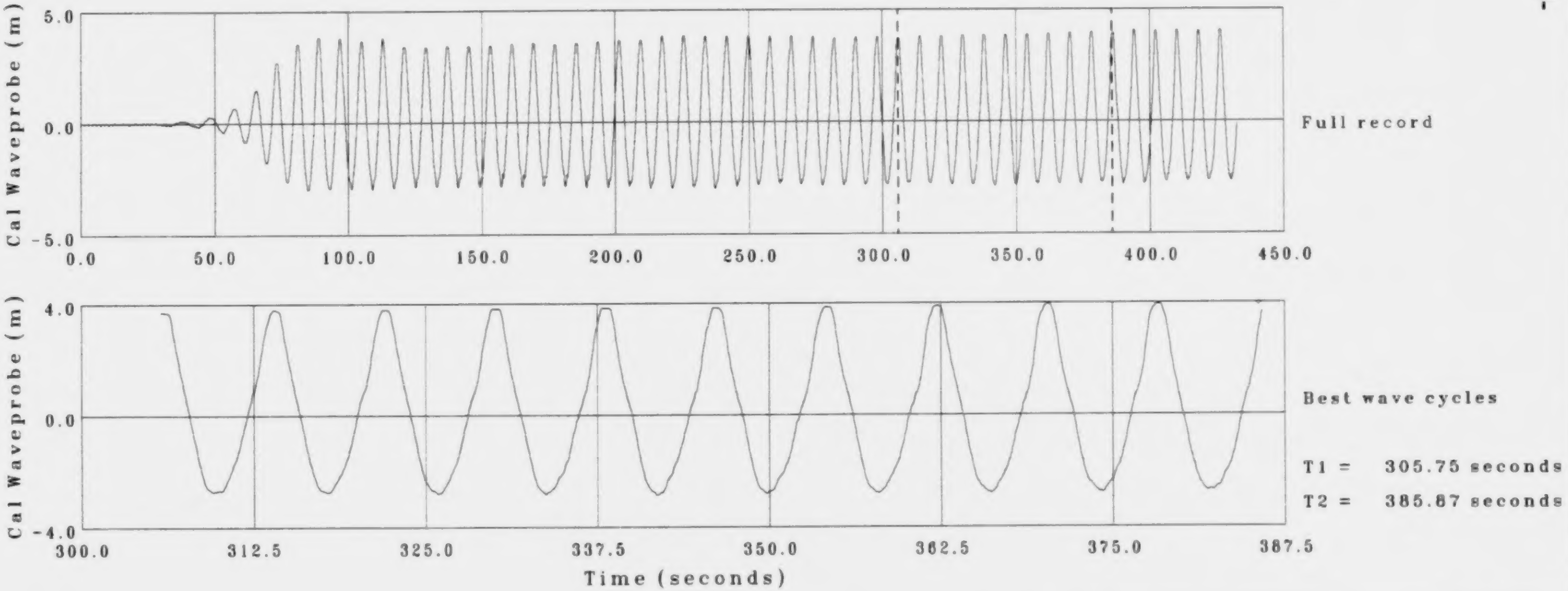
Figure A2 W4_13_15_001

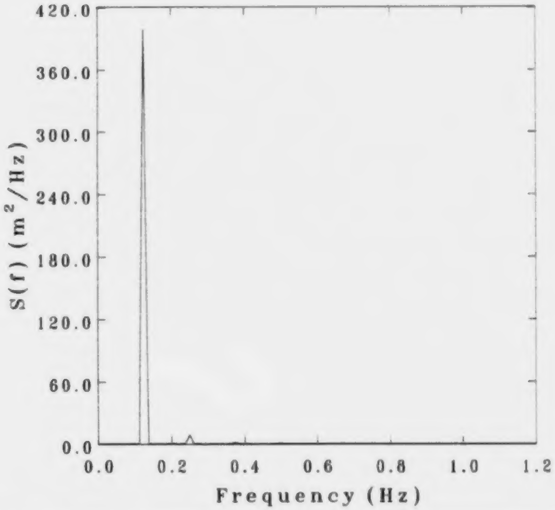
Evac Systems
Regular Wave Matching

NRC-IMD

Analyzed: 24-JUL-2002 14:05:03
Acquired: 27-SEP-2001 12:51:08

4-





Full record wave parameters:

Average wave height = 6.65 m
Average wave period = 8.03 seconds

Best wave cycles parameters:		**Target / (Tolerance):**
Average wave height	= 6.65 m	6.71 m
Average wave period	= 8.03 seconds	8.03 seconds
Deviation from target height	= 0.90 %	(5.0 %)
Wave height stability	= 3.52 %	(5.0 %)
Wave crest stability	= 2.63 %	(2.5 %)

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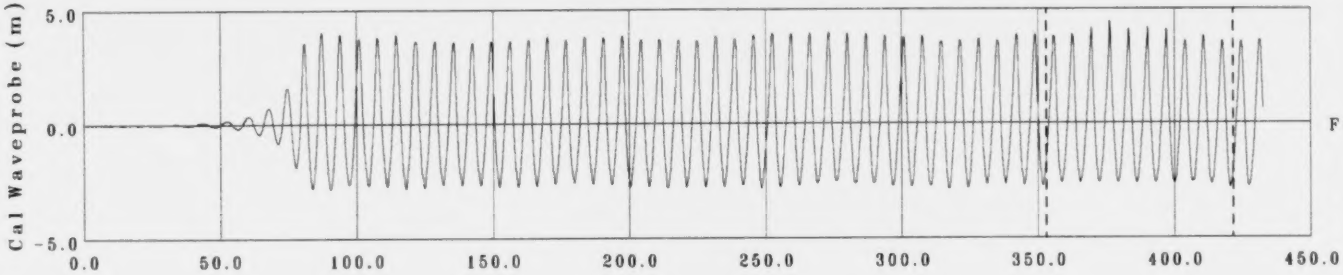
Figure A4 W5_13_15_002

Evac Systems
Regular Wave Matching

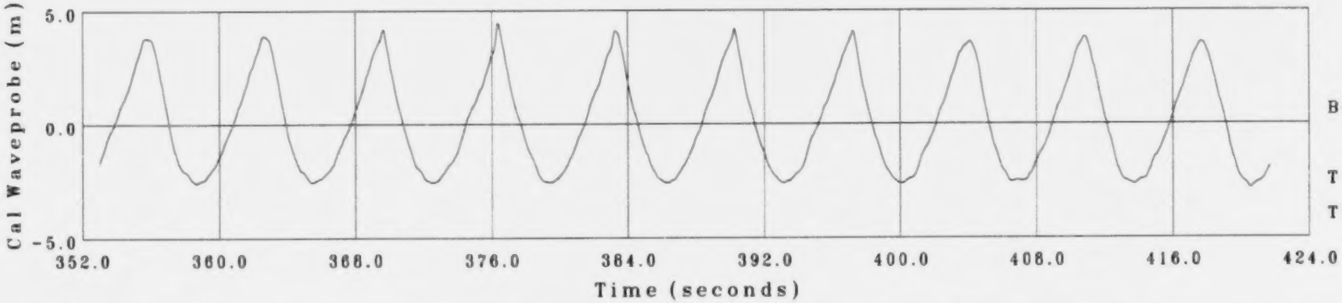
NRC-IMD

Analyzed: 24-JUL-2002 14:05:20
Acquired: 27-SEP-2001 13:30:37

4-



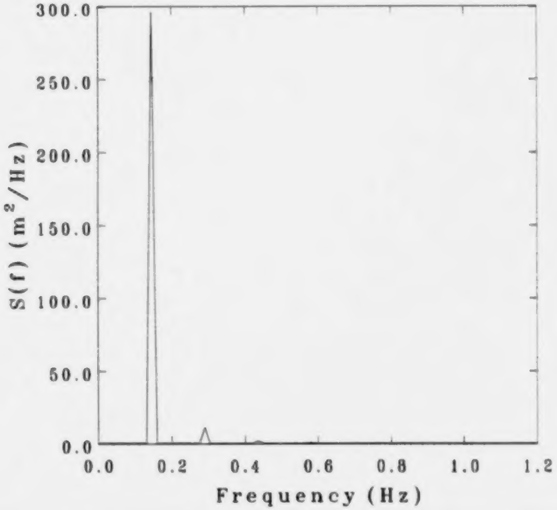
Full record



Best wave cycles

T1 = 352.98 seconds

T2 = 421.71 seconds



Full record wave parameters:		
Average wave height	= 6.61 m	
Average wave period	= 6.89 seconds	
Best wave cycles parameters:		**Target / (Tolerance):**
Average wave height	= 6.61 m	6.71 m
Average wave period	= 6.89 seconds	6.88 seconds
Deviation from target height	= 1.52 %	(5.0 %)
Wave height stability	= 13.70 %	(5.0 %)
Wave crest stability	= 12.09 %	(2.5 %)

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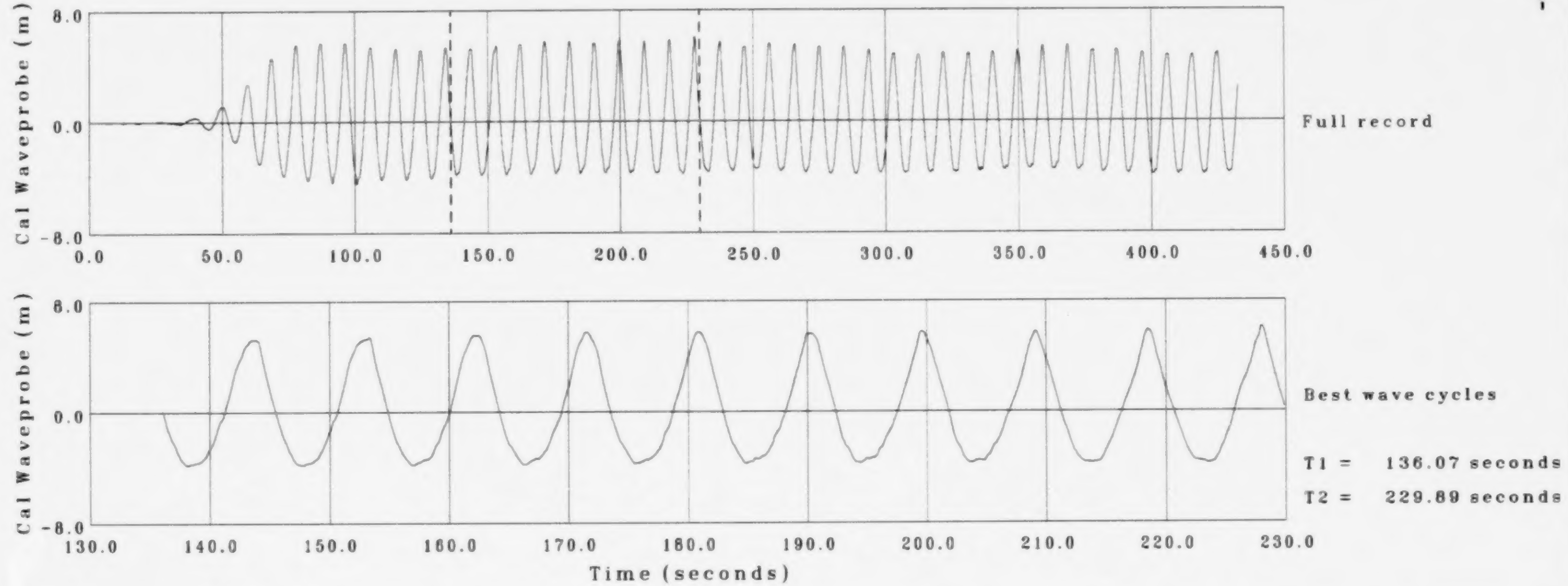
Figure A5 W5_13_10_002

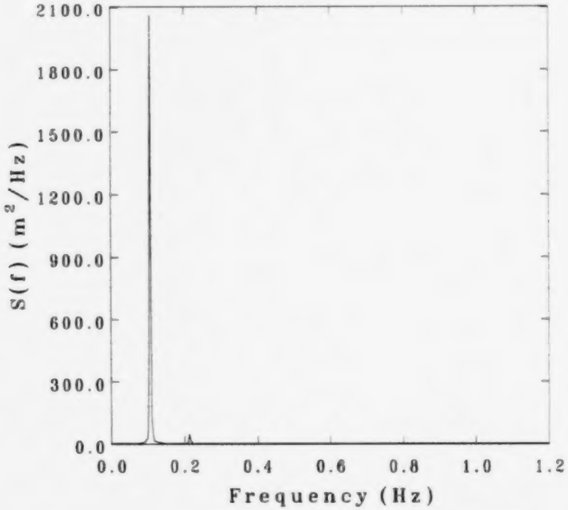
Evac Systems
Regular Wave Matching

NRC-IMD

Analyzed: 24-JUL-2002 14:06:11
Acquired: 27-SEP-2001 14:11:00

4-





Full record wave parameters:		
Average wave height	= 9.00 m	
Average wave period	= 9.38 seconds	
Best wave cycles parameters:		**Target / (Tolerance):**
Average wave height	= 9.40 m	9.14 m
Average wave period	= 9.39 seconds	9.37 seconds
Deviation from target height	= 2.81 %	(5.0 %)
Wave height stability	= 3.28 %	(5.0 %)
Wave crest stability	= 3.05 %	(2.5 %)

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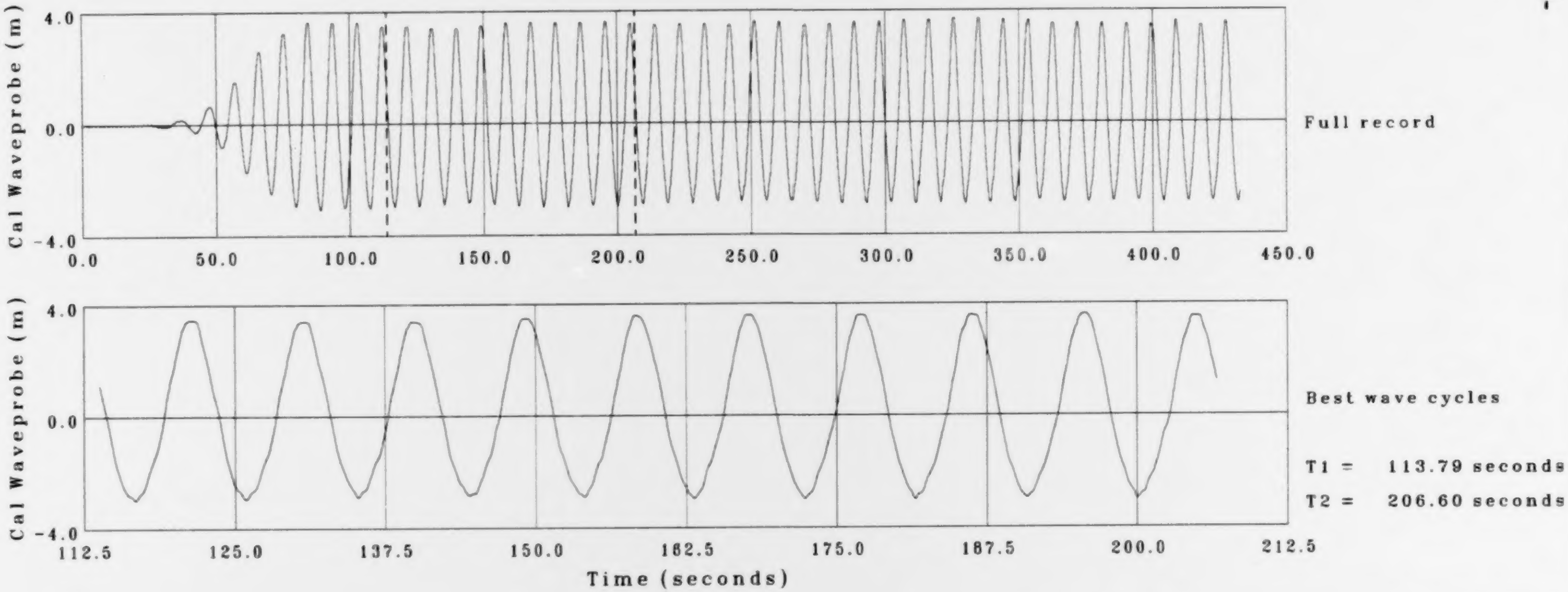
Figure A2 W6_13_15_001

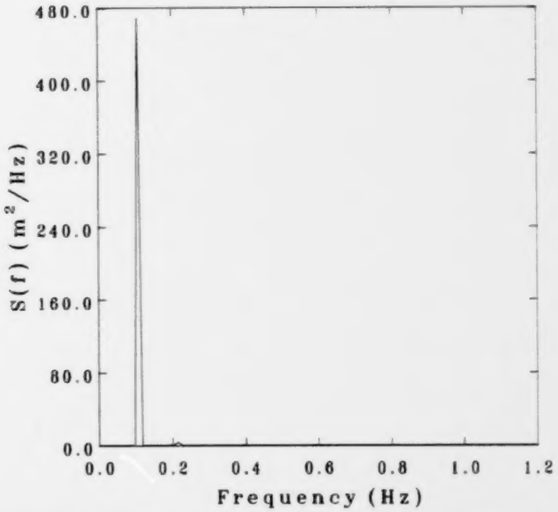
Evac Systems
Regular Wave Matching

NRC-IMD

Analyzed: 24-JUL-2002 14:04:49
Acquired: 27-SEP-2001 12:10:41

4-





		Target / (Tolerance):
Full record wave parameters:		
Average wave height	= 6.46 m	
Average wave period	= 9.28 seconds	
Best wave cycles parameters:		
Average wave height	= 6.46 m	6.71 m
Average wave period	= 9.28 seconds	9.27 seconds
Deviation from target height	= 3.74 %	(5.0 %)
Wave height stability	= 5.80 %	(5.0 %)
Wave crest stability	= 2.69 %	(2.5 %)

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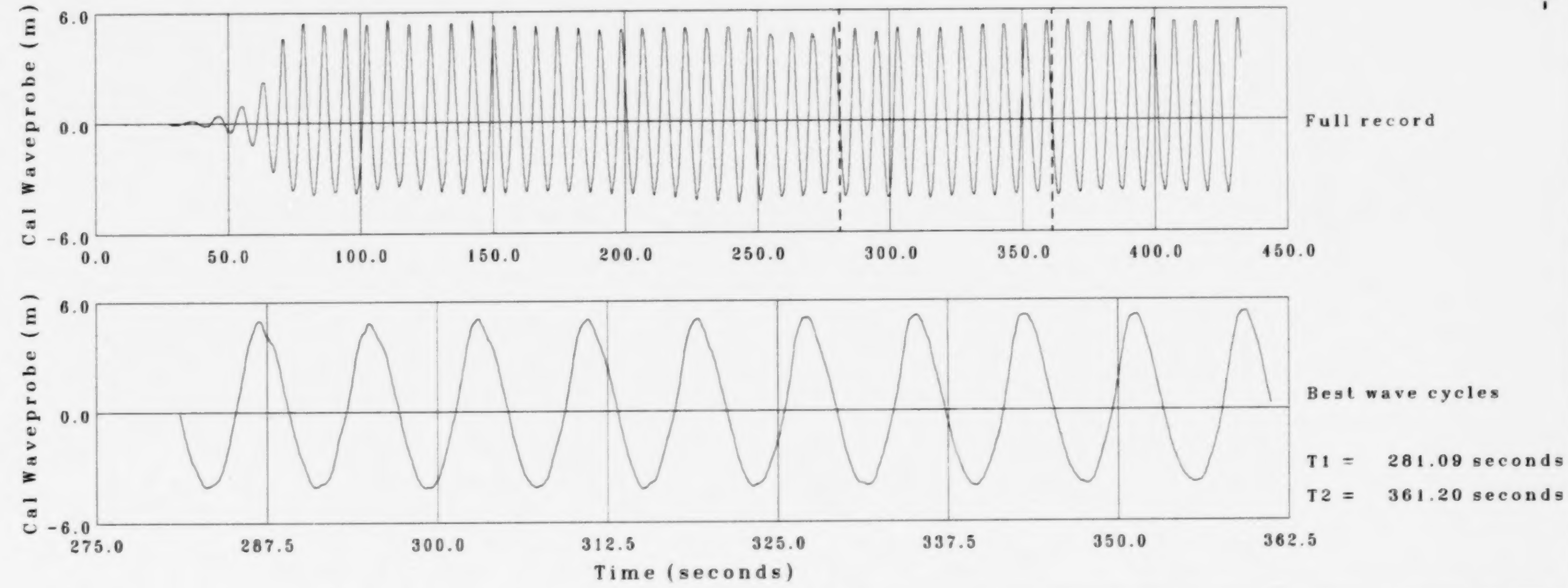
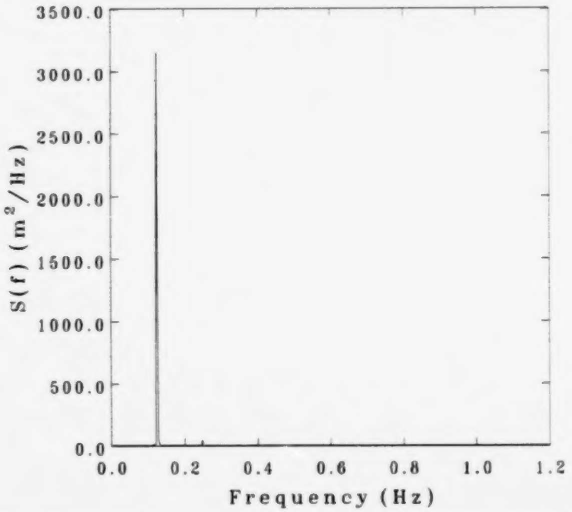
Figure A3 W5_13_20_002





Full record wave parameters:		
Average wave height	= 9.11 m	
Average wave period	= 8.03 seconds	
		Target /
Best wave cycles parameters:		(Tolerance):
Average wave height	= 9.14 m	9.14 m
Average wave period	= 8.03 seconds	8.02 seconds
Deviation from target height	= 0.00 %	(5.0 %)
Wave height stability	= 4.10 %	(5.0 %)
Wave crest stability	= 2.46 %	(2.5 %)

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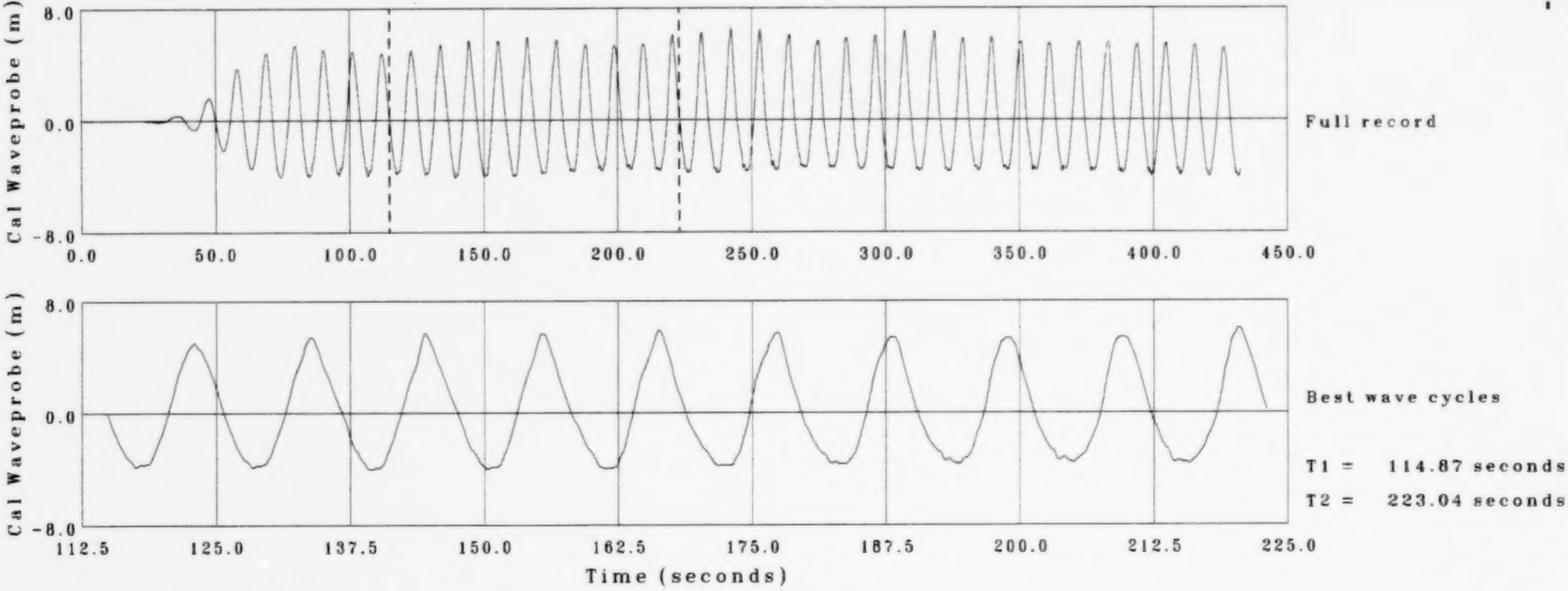
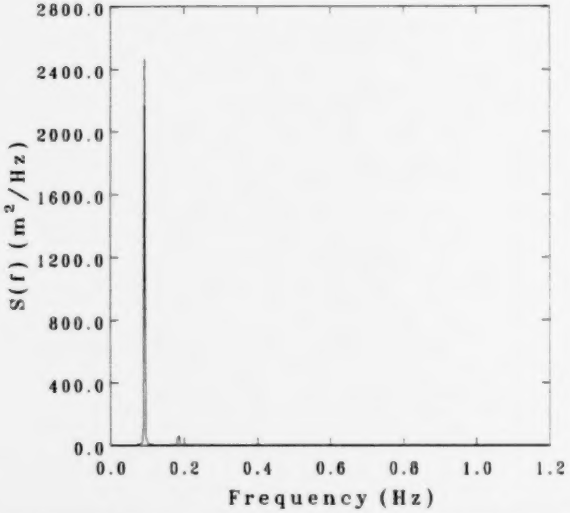
Figure A2 W6_13_10_001





		Target / (Tolerance):
Full record wave parameters:		
Average wave height	= 9.44 m	
Average wave period	= 10.83 seconds	
Best wave cycles parameters:		
Average wave height	= 9.38 m	9.14 m
Average wave period	= 10.85 seconds	10.82 seconds
Deviation from target height	= 2.67 %	(5.0 %)
Wave height stability	= 10.57 %	(5.0 %)
Wave crest stability	= 6.10 %	(2.5 %)

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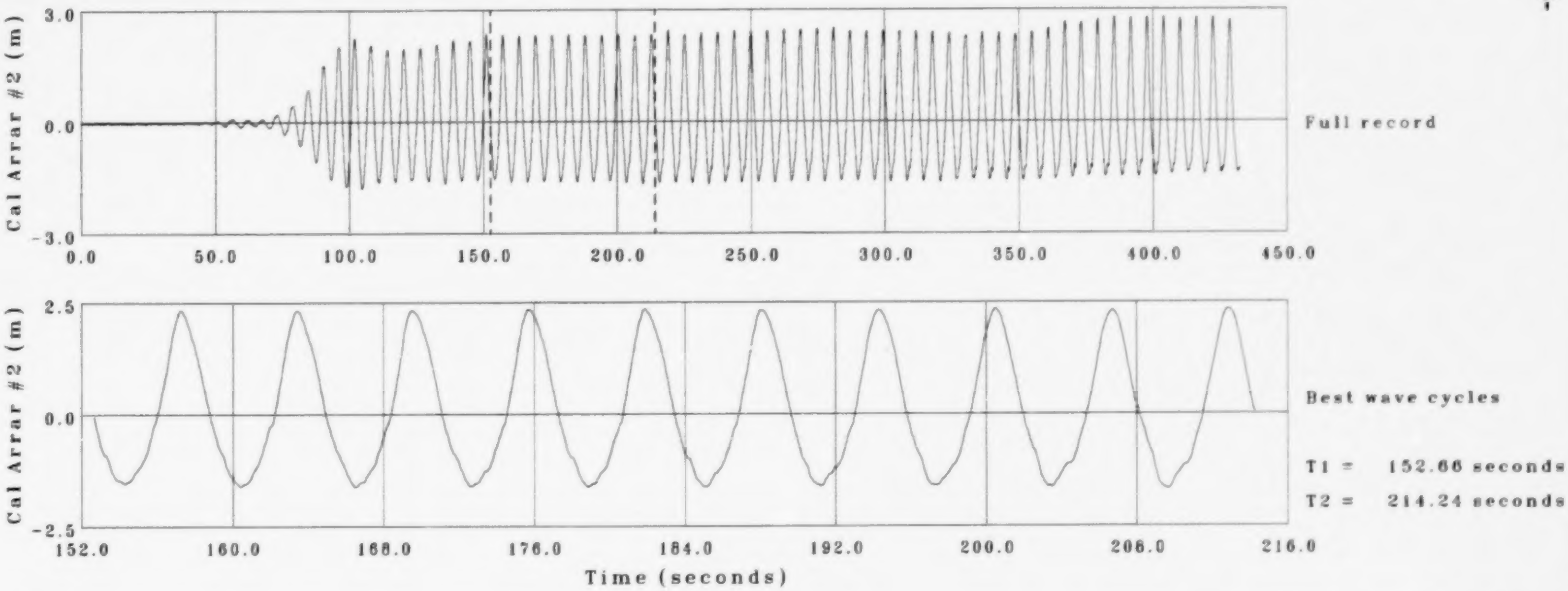
Figure A2 W6_13_20_001

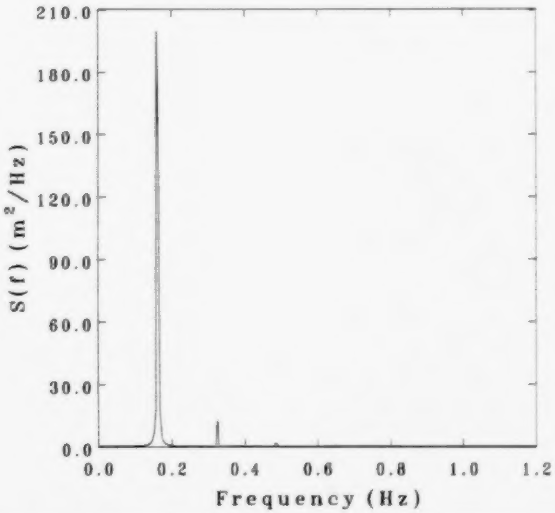
Evac Systems
Regular Wave Matching

NRC-IMD

Analyzed: 24-JUL-2002 14:14:15
Acquired: 30-JAN-2002 12:07:50

4-





Full record wave parameters:

		Target / (Tolerance):
Average wave height	= 3.98 m	
Average wave period	= 6.17 seconds	

Best wave cycles parameters:

		Target / (Tolerance):
Average wave height	= 3.94 m	3.96 m
Average wave period	= 6.16 seconds	6.17 seconds
Deviation from target height	= 0.50 %	(5.0 %)
Wave height stability	= 1.75 %	(5.0 %)
Wave crest stability	= 0.76 %	(2.5 %)

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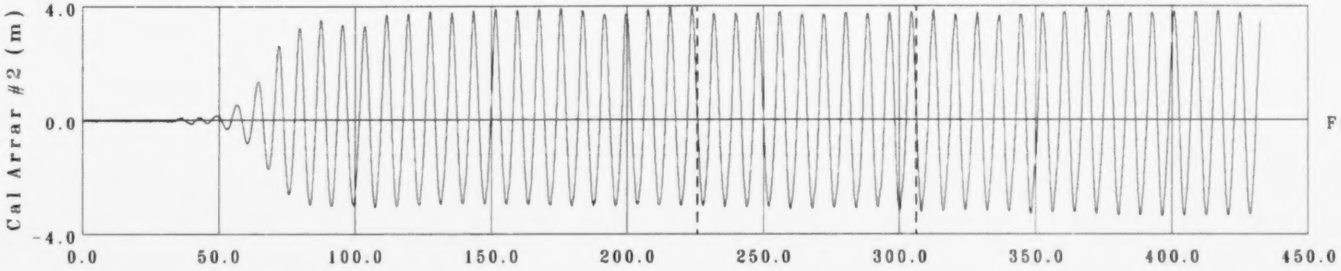
Figure A3 15W4_13_15_001

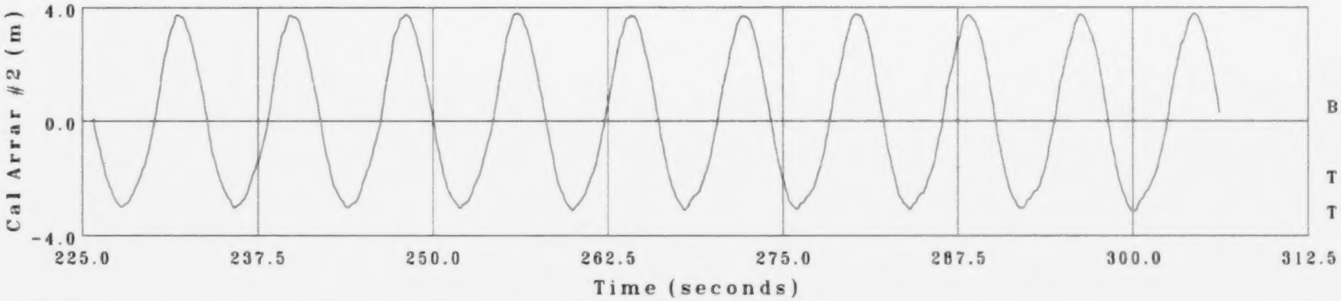
Evac Systems
Regular Wave Matching

NRC-IMD

Analyzed: 24-JUL-2002 14:14:47
Acquired: 30-JAN-2002 12:25:03

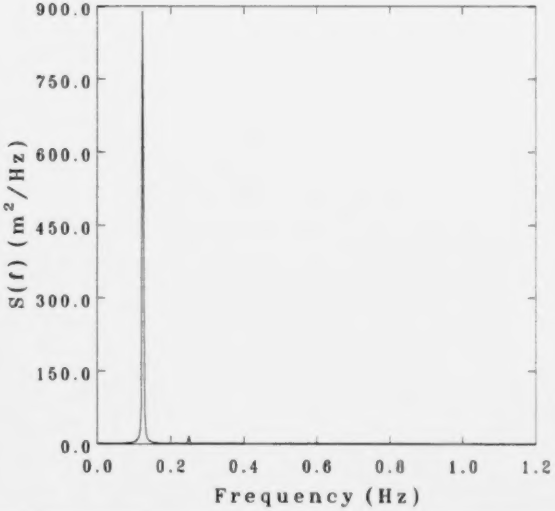


Full record



Best wave cycles

T1 = 225.78 seconds
T2 = 306.18 seconds



Full record wave parameters:

Average wave height = 6.90 m
Average wave period = 8.04 seconds

Best wave cycles parameters:		**Target / (Tolerance):**
Average wave height	= 6.81 m	6.71 m
Average wave period	= 8.04 seconds	8.03 seconds
Deviation from target height	= 1.42 %	(5.0 %)
Wave height stability	= 2.34 %	(5.0 %)
Wave crest stability	= 1.24 %	(2.5 %)

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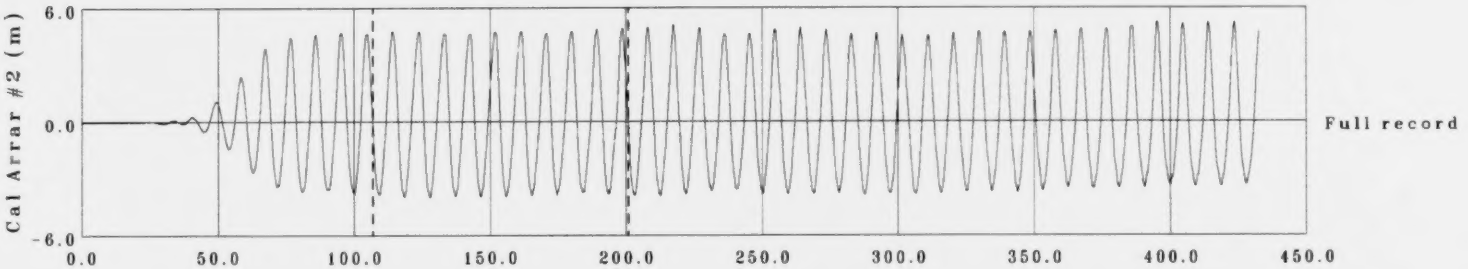
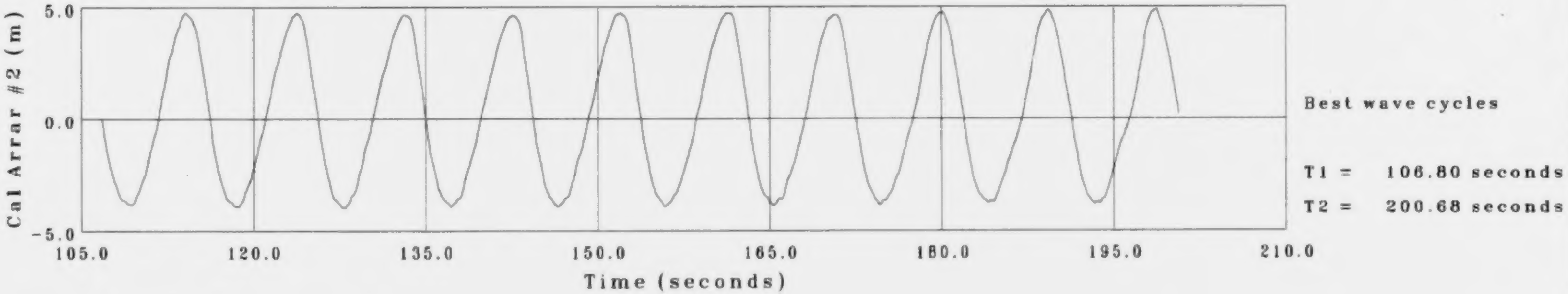
Figure A2 15W5_13_15_001

Evac Systems
Regular Wave Matching

NRC-IMD

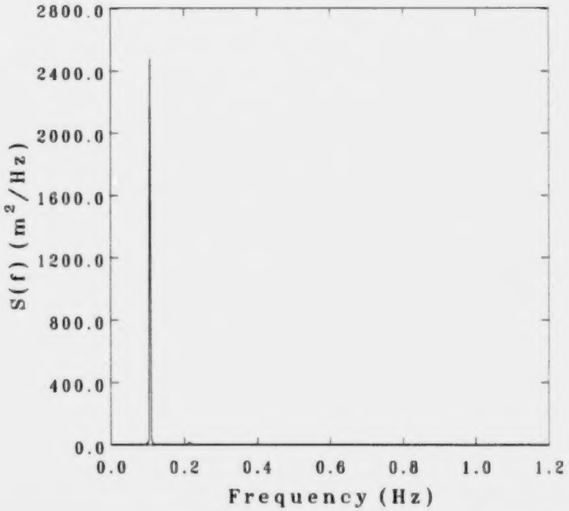
Analyzed: 24-JUL-2002 14:15:16
Acquired: 30-JAN-2002 12:36:26





T1 = 106.80 seconds

T2 = 200.68 seconds



Full record wave parameters:

Average wave height = 8.53 m

Average wave period = 9.38 seconds

Best wave cycles parameters:		Target / (Tolerance):
Average wave height	= 8.59 m	9.14 m
Average wave period	= 9.41 seconds	9.37 seconds
Deviation from target height	= 5.99 %	(5.0 %)
Wave height stability	= 2.84 %	(5.0 %)
Wave crest stability	= 3.07 %	(2.5 %)

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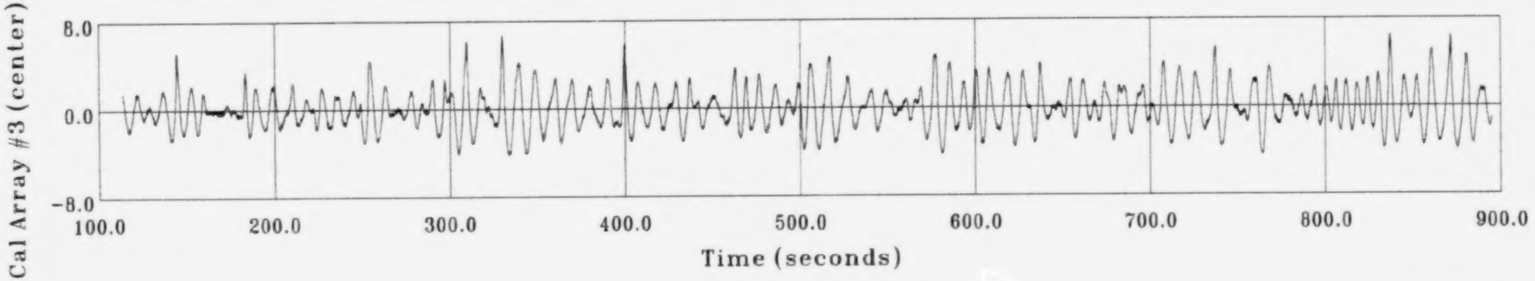
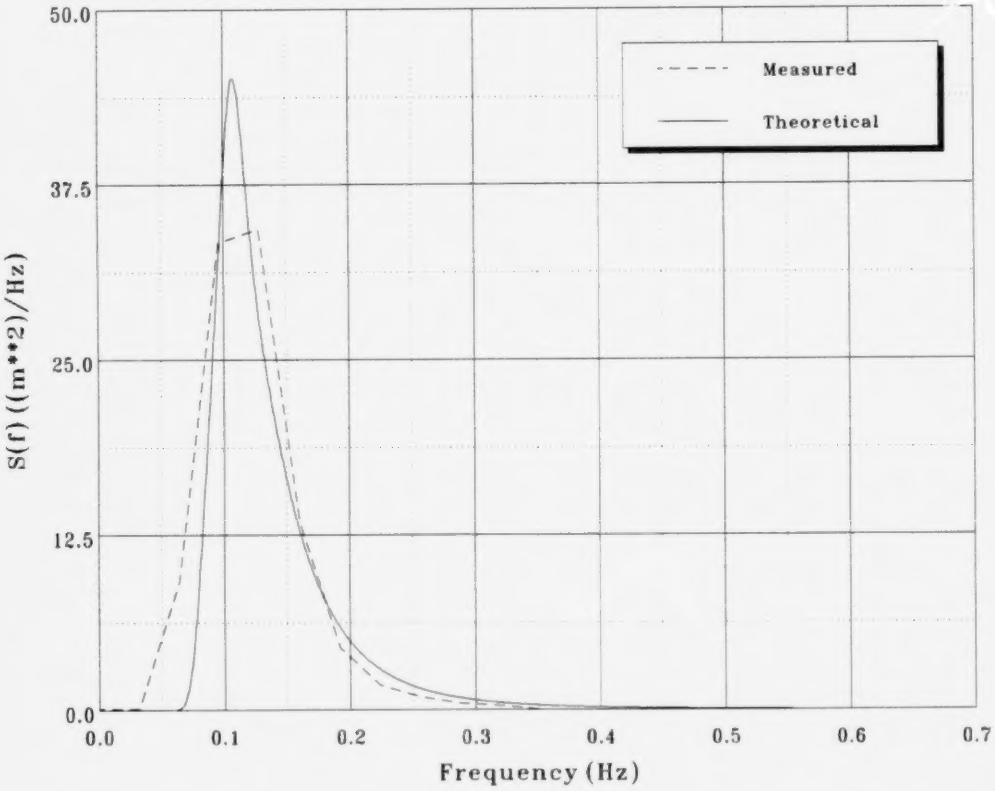
Figure A2 15W6_13_15_001

Evac Systems
Irregular Wave w/o Model

NRC-IMD

Analyzed: 24-JUL-2002 14:20:00
Acquired: 30-JAN-2002 14:04:36





Spectral Analysis:		TARGET / (TOLERANCE)
Hm_0	= 7.0897 m	
T_{pd}	= 8.8241 s	9.3000 s
m_0	= 3.1415	
m_2	= 0.0518	
T_z	= 7.7847 s	
ε_4	= 0.5832	
DOF	= 102.00	
Deviation from target T_p	= 5.117 %	(7.5 %)

Zero-Crossing Analysis:		
H_s	= 7.2159 m	6.7000 m
T_{av}	= 7.4608 s	9.300 s
Deviation from target H_s	= 7.701 %	(2.5 %)
Deviation from target T_{av}	= 19.78 %	(5.0 %)

National Research Council Canada
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GENERATED BY:

CHECKED BY:

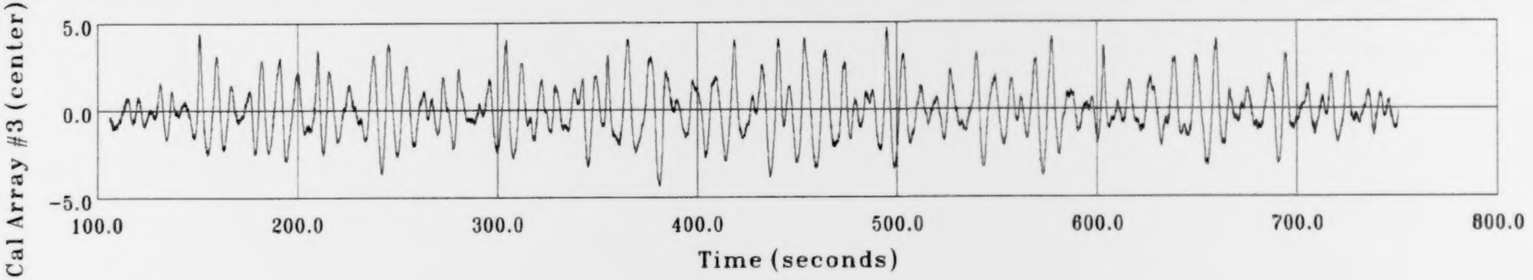
APPROVED BY:

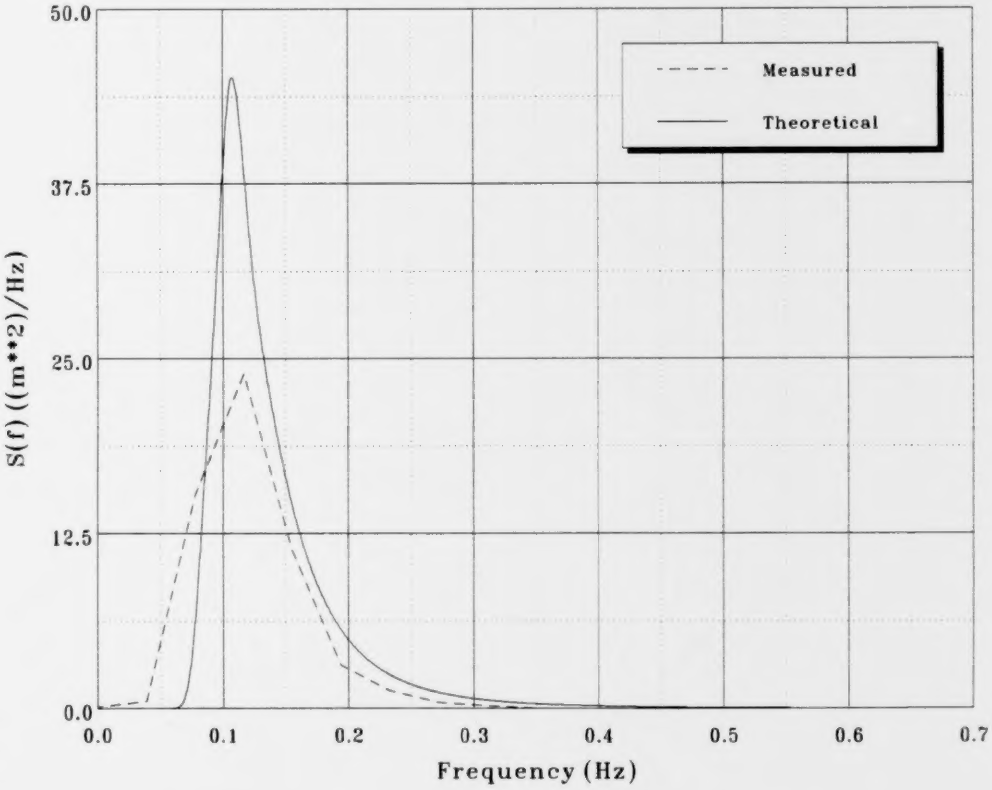
Figure A2 SNAP_HS6P7_TP9P3_001

Evac Systems
Irregular Wave w/o Model

NRC-IMD

Analyzed: 24-JUL-2002 14:20:37
Acquired: 30-JAN-2002 14:21:25





Spectral Analysis:		**TARGET / (TOLERANCE)**
Hm_0	= 5.8969 m	
T_{pd}	= 8.8343 s	9.3000 s
m_0	= 2.1733	
m_2	= 0.0358	
T_Z	= 7.7923 s	
ε_4	= 0.5942	
DOF	= 102.00	
Deviation from target T_p	= 5.008 %	(7.5 %)

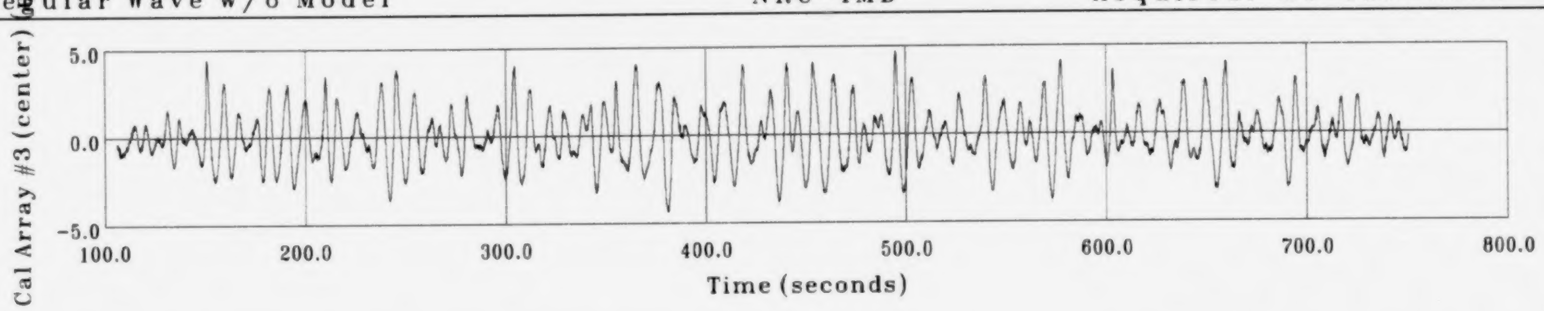
Zero-Crossing Analysis:		
H_s	= 5.9387 m	6.7000 m
T_{av}	= 6.8638 s	9.300 s
Deviation from target H_s	= -11.36 %	(2.5 %)
Deviation from target T_{av}	= 26.20 %	(5.0 %)

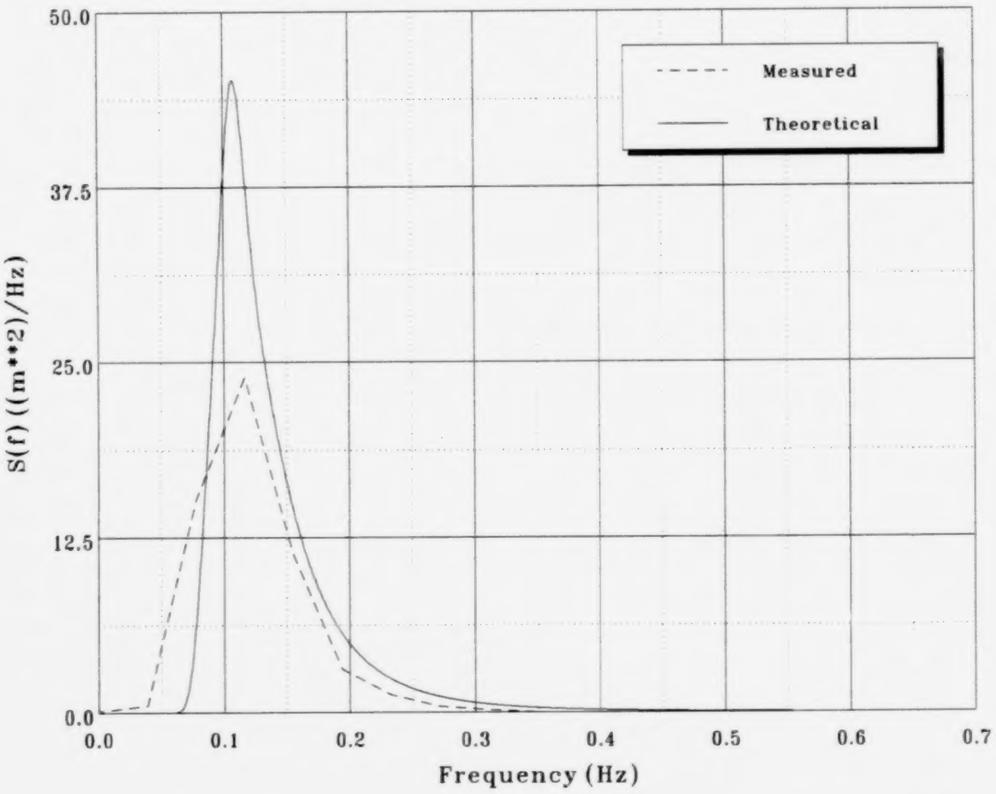
National Research Council Canada Institute for Marine Dynamics	GENERATED BY:	CHECKED BY:	APPROVED BY:
	Figure A2 SNAP15_HS6P7_TP9P3_001		

Evac Systems
Irregular Wave w/o Model

NRC-IMD

Analyzed: 24-JUL-2002 14:20:37
Acquired: 30-JAN-2002 14:21:25





Spectral Analysis:		TARGET / (TOLERANCE)
Hm_0	= 5.8969 m	
T_{pd}	= 8.8343 s	9.3000 s
m_0	= 2.1733	
m_2	= 0.0358	
T_z	= 7.7923 s	
ε_4	= 0.5942	
DOF	= 102.00	
Deviation from target T_p	= 5.008 %	(7.5 %)

Zero-Crossing Analysis:		
H_s	= 5.9387 m	6.7000 m
T_{av}	= 6.8638 s	9.300 s
Deviation from target H_s	= −11.36 %	(2.5 %)
Deviation from target T_{av}	= 26.20 %	(5.0 %)

National Research Council Canada
Institute for Marine Dynamics

GENERATED BY:	CHECKED BY:	APPROVED BY:

Figure A2 SNAP15_HS6P7_TP9P3_001

Appendix 5

Calibrated Sensors

Calibration of DASPC2 Channel 1 16:50 04 December 2001

Project: Evacuation Systems **Facility:** ocb

Sensor: Beam Waveprobe **Model:** N/A **Serial Number:** E00

Programmable Gain: 1 **Plug-In Gain:** 10 **Filter Frequency:** 10.0 Hz

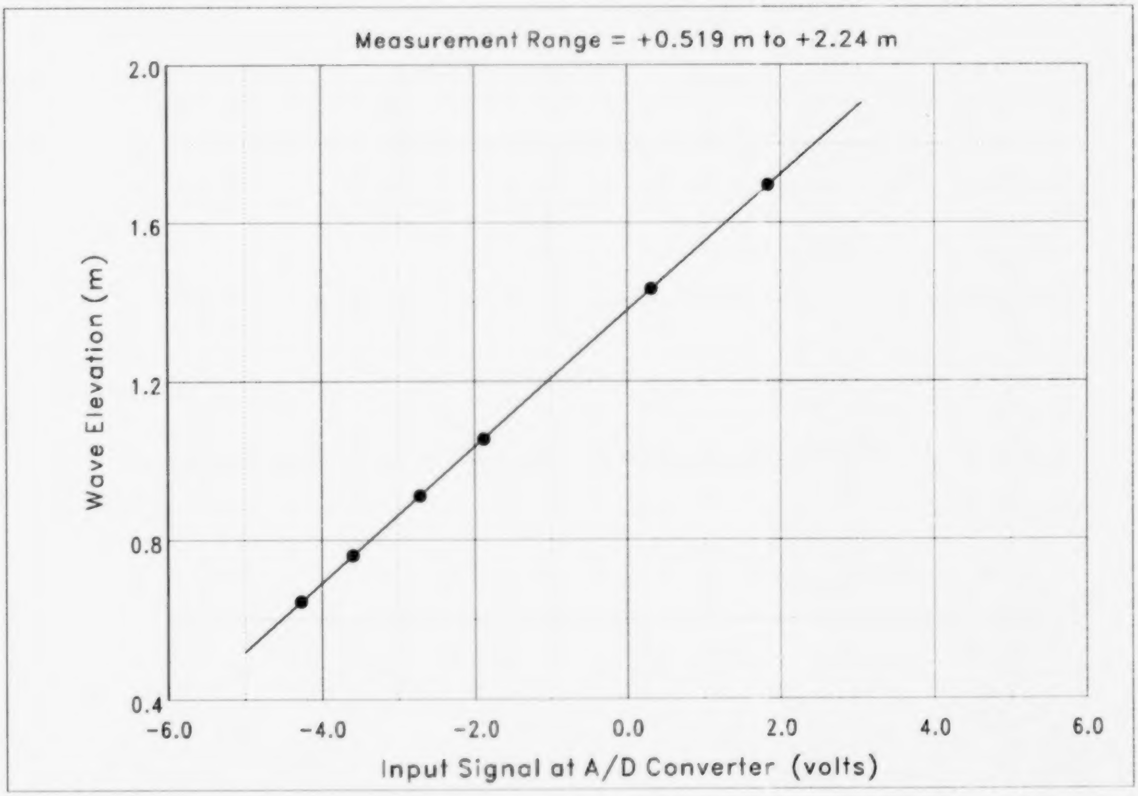
Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	−4.272	0.6450	0.6442	−0.0008488	
2	−3.590	0.7620	0.7614	−0.0006456	
3	−2.716	0.9110	0.9117	0.0007331	
4	−1.879	1.0540	1.0556	0.0016122	⇐ Maximum Error
5	0.313	1.4330	1.4326	−0.0004200	
6	1.837	1.6950	1.6946	−0.0004311	
Maximum Error = 0.154 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Wave Elevation (m),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 1.37870 m,
and C_1 = 0.171955 m/volt .


Measurement Range = +0.519 m to +2.24 m

Calibration of DASPC2 Channel 2 17:04 04 December 2001

Project: Evacuation Systems **Facility:** ocb

Sensor: Upstream Waveprobe **Model:** N/A **Serial Number:** E01

Programmable Gain: 1 **Plug-In Gain:** 10 **Filter Frequency:** 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	4.802	0.8090	0.8080	−0.00099492	⇐ Maximum Error
2	3.011	1.0990	1.0996	0.00057912	
3	2.163	1.2370	1.2377	0.00068843	
4	1.158	1.4010	1.4013	0.00026500	
5	0.125	1.5690	1.5694	0.00043988	
6	−1.212	1.7880	1.7870	−0.00097716	
Maximum Error = −0.102 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

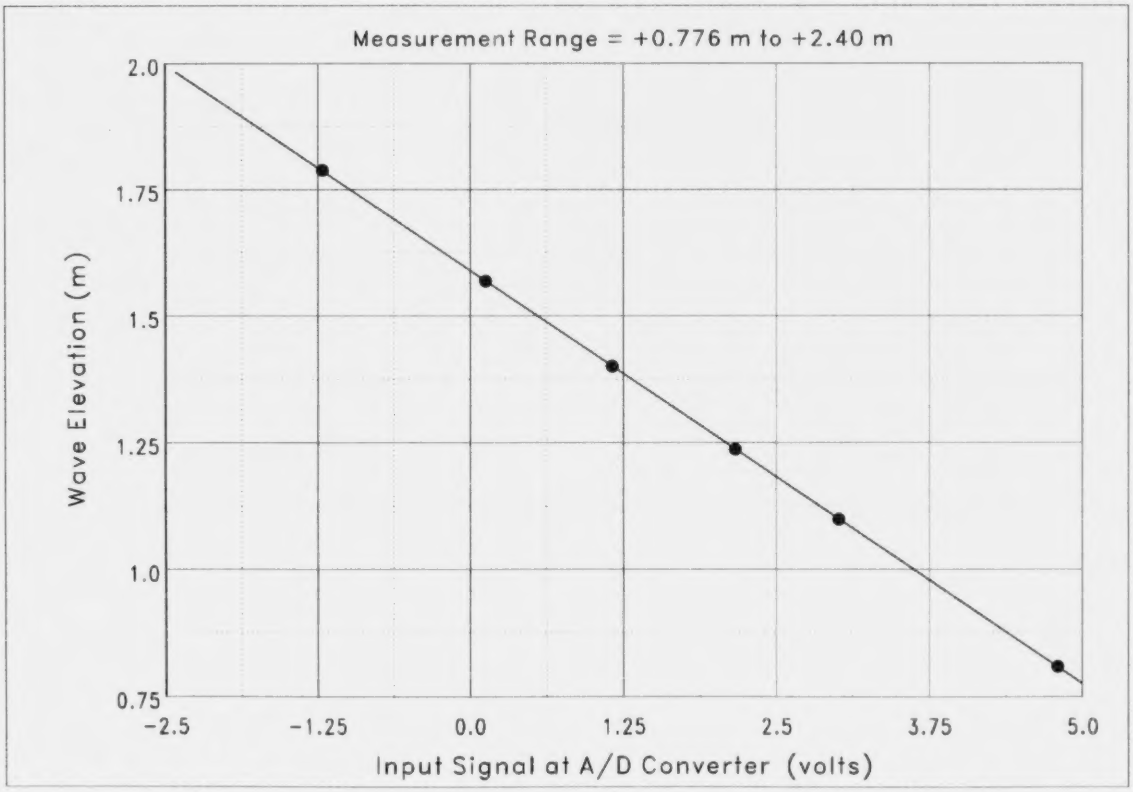
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Wave Elevation (m),

$V(t)$ = input signal at A/D converter (volts),

C_0 = 1.58979 m,

and C_1 = −0.162793 m/volt .



Calibration of DASPC2 Channel 4 15:46 04 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: array #1 **Model:** N/A **Serial Number:** e-03

Programmable Gain: 1 **Plug-In Gain:** 10 **Filter Frequency:** 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	−0.926	0.5620	0.5626	0.00061923	⇐ Maximum Error
2	−0.495	0.6670	0.6666	−0.00041926	
3	−0.093	0.7640	0.7636	−0.00040561	
4	0.347	0.8700	0.8698	−0.00020295	
5	0.975	1.0210	1.0214	0.00040853	
Maximum Error = 0.135 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

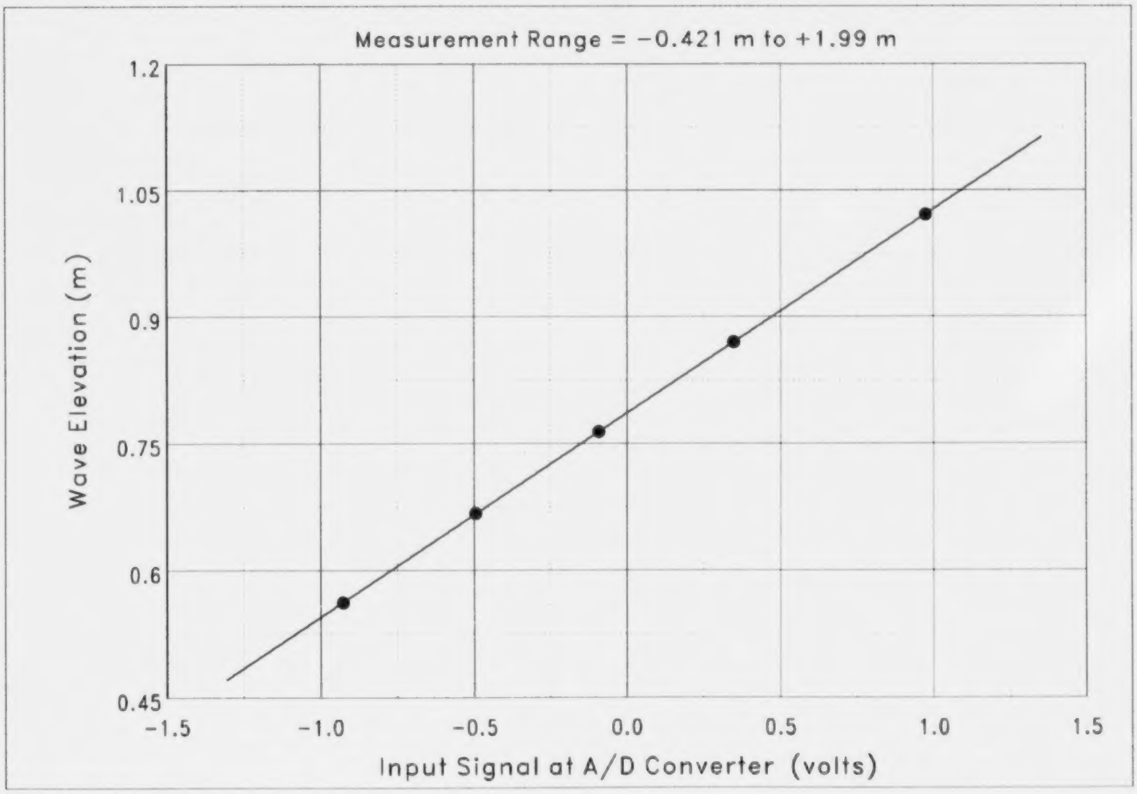
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Wave Elevation (m),

$V(t)$ = input signal at A/D converter (volts),

C_0 = 0.786065 m,

and C_1 = 0.241369 m/volt .



Calibration of DASPC2 Channel 5 16:00 04 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Cal Arrar #2 **Model:** 1.5 m **Serial Number:** d-08

Programmable Gain: 1 **Plug-In Gain:** 10 **Filter Frequency:** 10.0 Hz

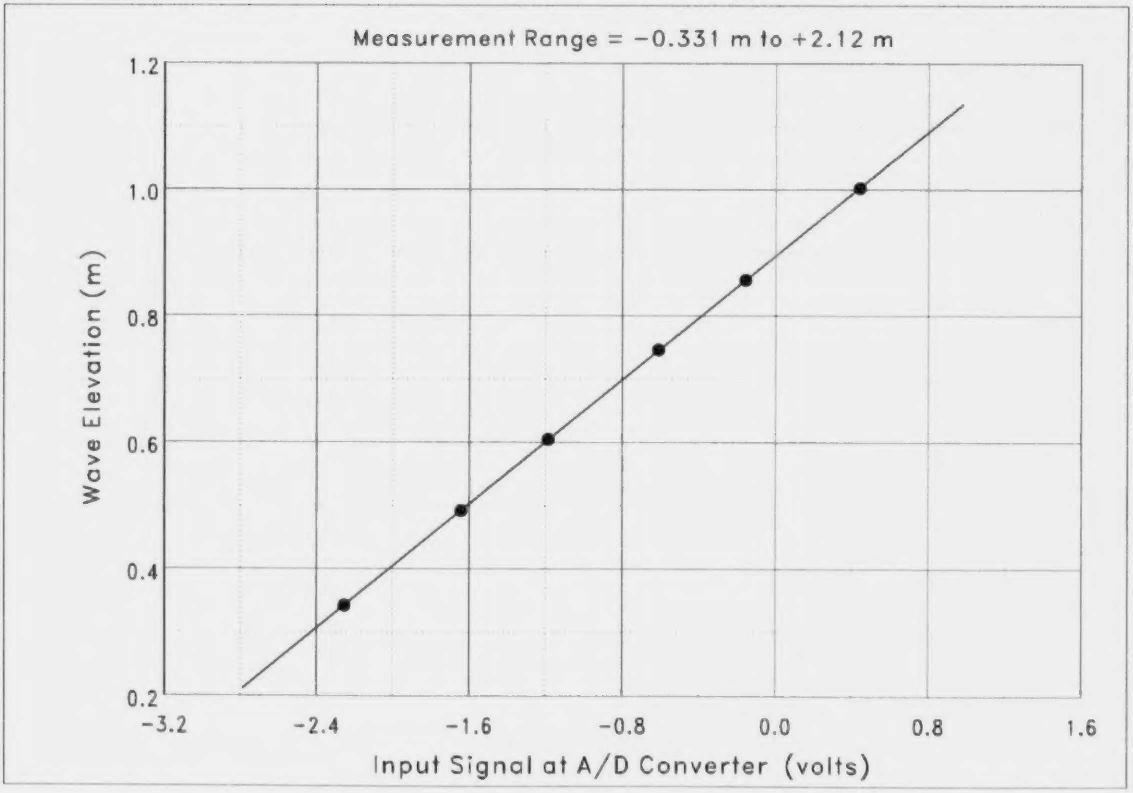
Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	−2.252	0.3420	0.3428	0.0007542	
2	−1.642	0.4920	0.4924	0.0003992	
3	−1.188	0.6050	0.6038	−0.0012406	⇐ Maximum Error
4	−0.610	0.7460	0.7453	−0.0006576	
5	−0.156	0.8570	0.8567	−0.0002539	
6	0.440	1.0020	1.0030	0.0009985	
Maximum Error = −0.188 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Wave Elevation (m),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 0.895046 m,
and C_1 = 0.245231 m/volt .


Measurement Range = −0.331 m to +2.12 m

Calibration of DASPC2 Channel 6 16:14 04 December 2001

Project: Evacuation Systems

Facility: oeb

Sensor: Cal Array #3 (center)

Model: 1.5 m

Serial Number: d-09

Programmable Gain: 1

Plug-In Gain: 10

Filter Frequency: 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	0.840	0.5590	0.5593	0.00028962	⇐ Maximum Error
2	1.185	0.6440	0.6438	−0.00021309	
3	1.829	0.8020	0.8017	−0.00025845	
4	2.804	1.0410	1.0412	0.00016010	
5	3.212	1.1410	1.1412	0.00016046	
6	3.484	1.2080	1.2079	−0.00013828	
Maximum Error = 0.0146 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

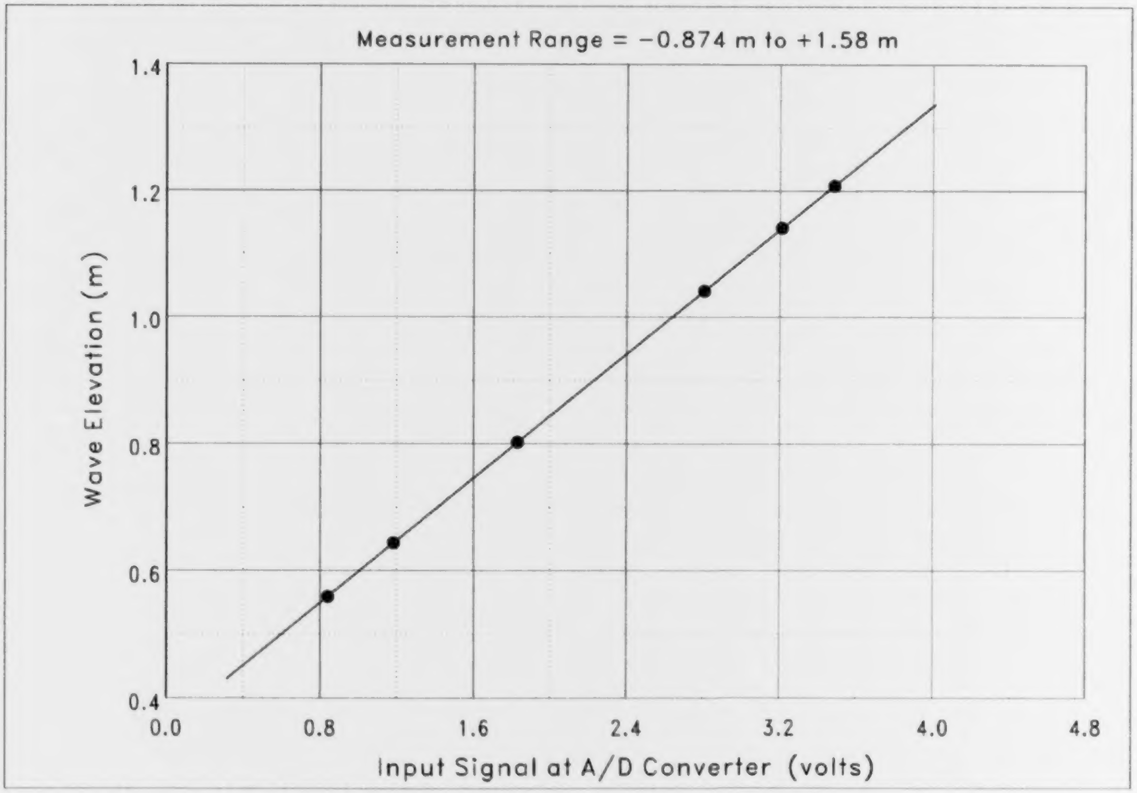
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Wave Elevation (m),

$V(t)$ = input signal at A/D converter (volts),

C_0 = 0.353051 m,

and C_1 = 0.245378 m/volt .



Calibration of DASPC2 Channel 7 16:27 04 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Cal Array #4 **Model:** 1.5 m **Serial Number:** d-10

Programmable Gain: 1 **Plug-In Gain:** 10 **Filter Frequency:** 10.0 Hz

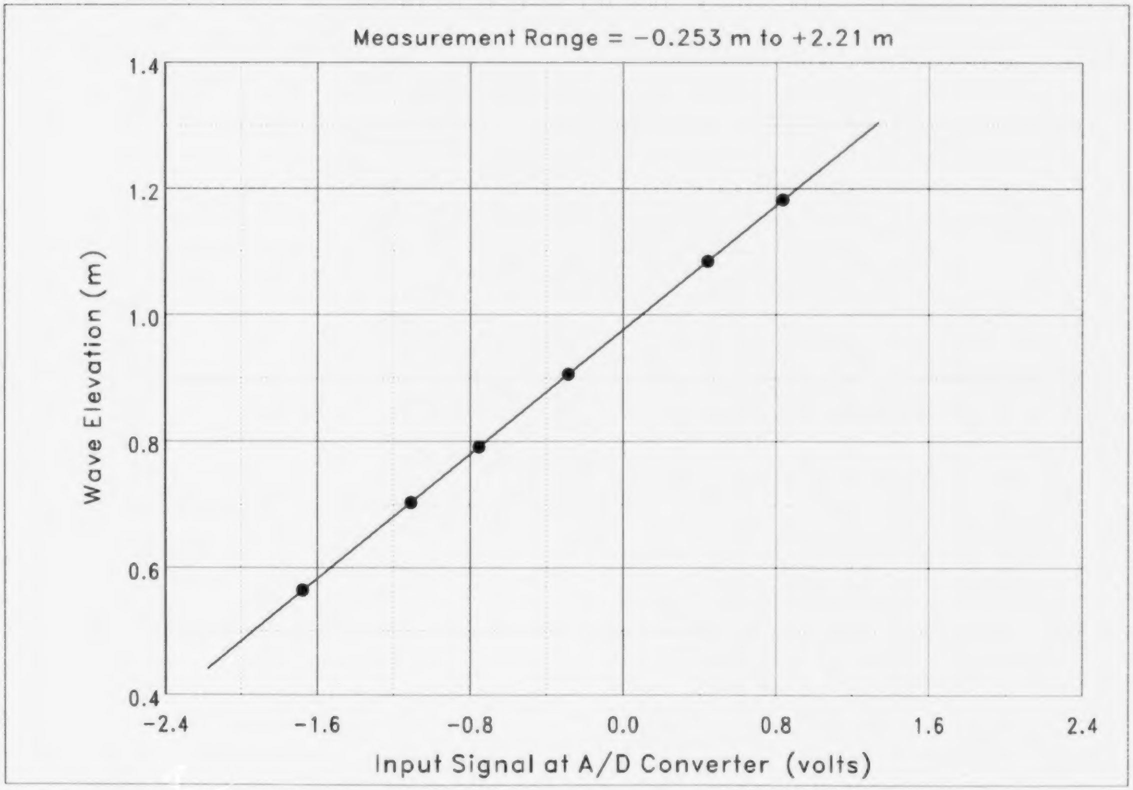
Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	−1.675	0.5650	0.5644	−0.00056738	
2	−1.109	0.7030	0.7037	0.00067133	⇐ Maximum Error
3	−0.753	0.7910	0.7912	0.00021231	
4	−0.287	0.9060	0.9059	−0.00013167	
5	0.441	1.0850	1.0848	−0.00017834	
6	0.836	1.1820	1.1820	−0.00000620	
Maximum Error = 0.109 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$Y = C_0 + C_1 \cdot V$

where $Y(t)$ = Wave Elevation (m),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 0.976393 m,
and C_1 = 0.245949 m/volt .



Calibration of DASPC2 Channel 8 16:37 04 December 2001

Project:	Evacuation Systems			**Facility:**	ocb
Sensor:	Cal Array #5 (East)	**Model:**	1.5 m	**Serial Number:**	d-11
Programmable Gain:	1	**Plug-In Gain:**	10	**Filter Frequency:**	10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	−2.308	0.47600	0.47627	0.00026965	
2	−1.901	0.57500	0.57451	−0.00048733	⇐ Maximum Error
3	−1.505	0.67000	0.67000	−0.00000030	
4	−0.985	0.79500	0.79539	0.00039023	
5	−0.465	0.92100	0.92083	−0.00017232	
Maximum Error = −0.110 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

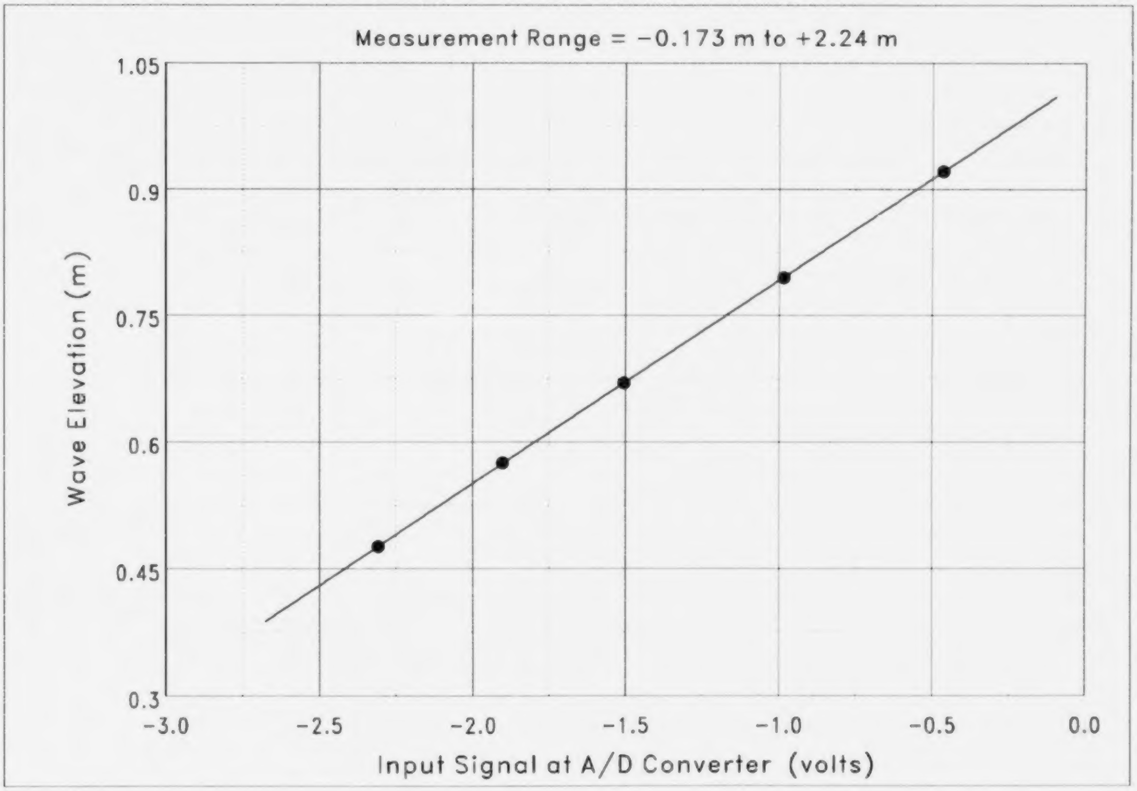
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Wave Elevation (m),

$V(t)$ = input signal at A/D converter (volts),

C_0 = 1.03307 m,

and C_1 = 0.241212 m/volt .



Calibration of DASPC2 Channel 9 09:46 07 December 2001

Project: Evacuation Systems
Facility: oeb

Sensor: X
Model: Qualisys
Serial Number: d-00

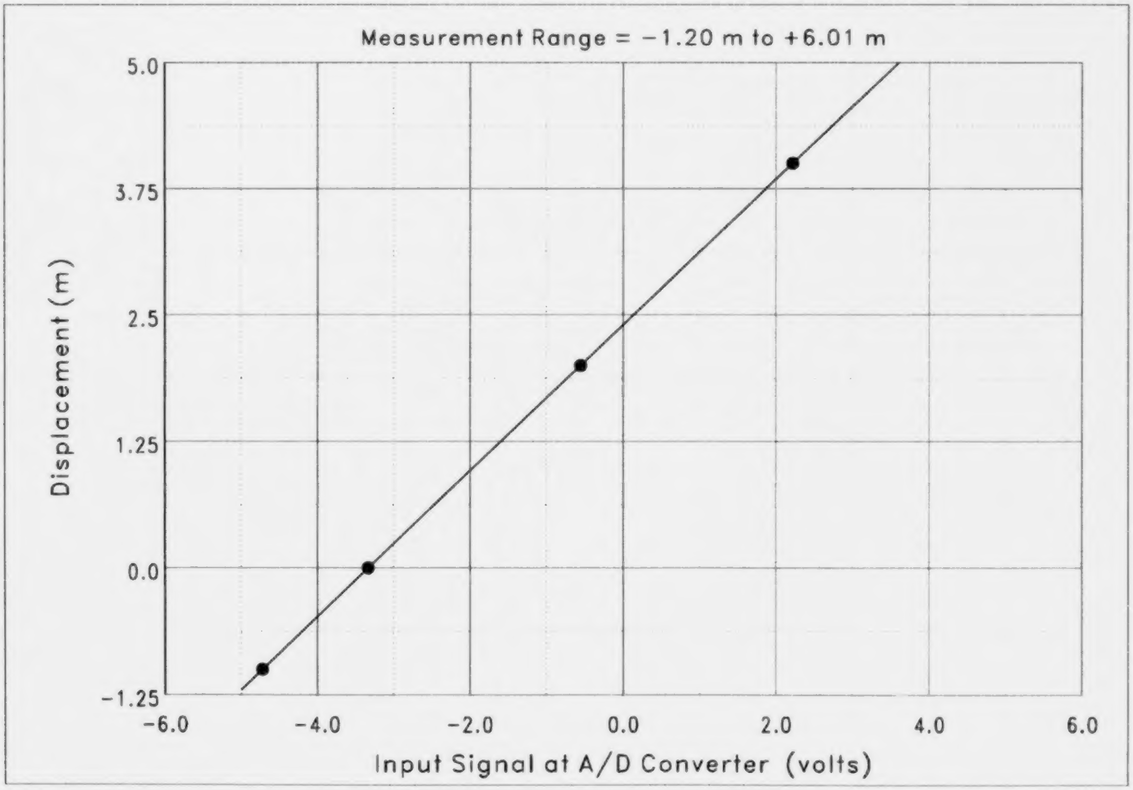
Programmable Gain: 1
Plug-In Gain: 1
Filter Frequency: 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	−4.719	−1.0000	−1.0000	0.000019550	
2	−3.332	0.0000	−0.0001	−0.000070333	
3	−0.557	2.0000	2.0001	0.000090837	⇐ Maximum Error
4	2.218	4.0000	4.0000	−0.000040531	
Maximum Error = 0.00182 % of Calibration Range.					

Definition of Calibration Curve
Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Displacement (m),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 2.40158 m,
and C_1 = 0.720777 m/volt .



Calibration of DASPC2 Channel 10 09:49 07 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Z **Model:** Qualisys **Serial Number:** d-01

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

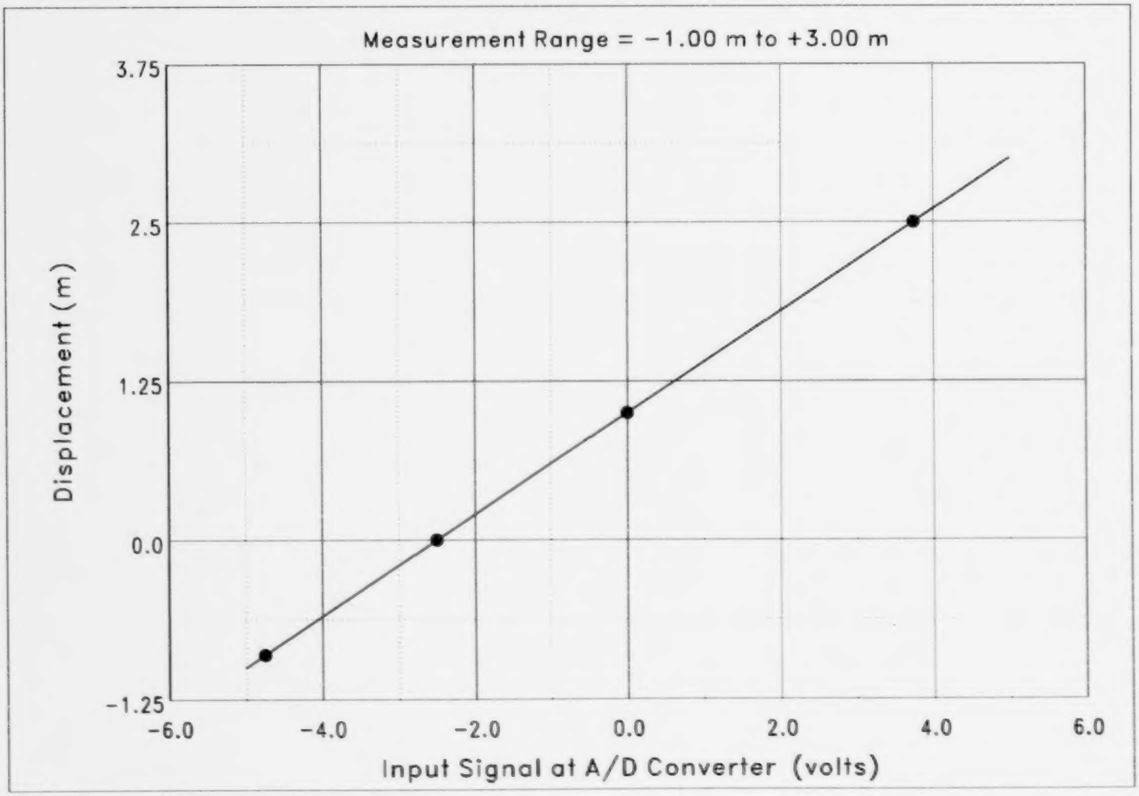
Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	−4.749	−0.9000	−0.9000	−0.000004888	
2	−2.502	0.0000	0.0000	0.000010610	⇐ Maximum Error
3	−0.004	1.0000	1.0000	−0.000007212	
4	3.742	2.5000	2.5000	0.000001192	
Maximum Error = 0.000312 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Displacement (m),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 1.00179 m,
and C_1 = 0.400428 m/volt .



Calibration of DASPC2 Channel 11 — 09:53 07 December 2001

Project: Evacuation Systems

Facility: oeb

Sensor: Y

Model: Qualisys

Serial Number: d-02

Programmable Gain: 1

Plug-In Gain: 1

Filter Frequency: 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	−4.165	−3.5000	−3.5000	0.000012636	
2	−0.835	−1.5000	−1.5000	0.000004530	
3	1.662	0.0000	−0.0001	−0.000052094	⇐ Maximum Error
4	4.159	1.5000	1.5000	0.000034571	
Maximum Error = −0.00104 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

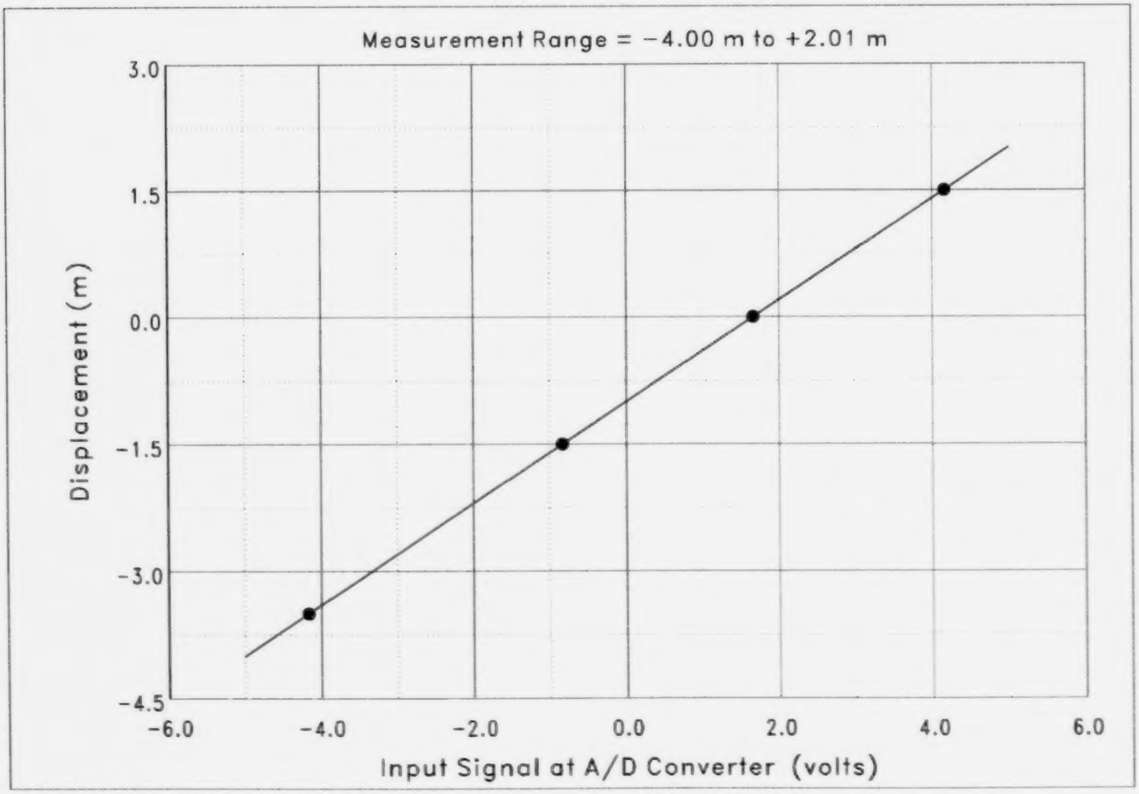
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Displacement (m),

$V(t)$ = input signal at A/D converter (volts),

C_0 = −0.998224 m,

and C_1 = 0.600669 m/volt .



Calibration of DASPC2 Channel 12 10:07 14 December 2001

Project: Evacuation Systems

Facility: ocb

Sensor: Yaw

Model: Qualisys

Serial Number: d-03

Programmable Gain: 1

Plug-In Gain: 1

Filter Frequency: 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (deg)	Fitted Curve Value (deg)	Error (deg)	
1	−4.445	−160.00	−159.99	0.0051117	
2	−2.225	−80.00	−80.00	−0.0023422	
3	−0.006	0.00	−0.01	−0.0067112	⇐ Maximum Error
4	4.433	160.00	160.00	0.0039520	
Maximum Error = −0.00210 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

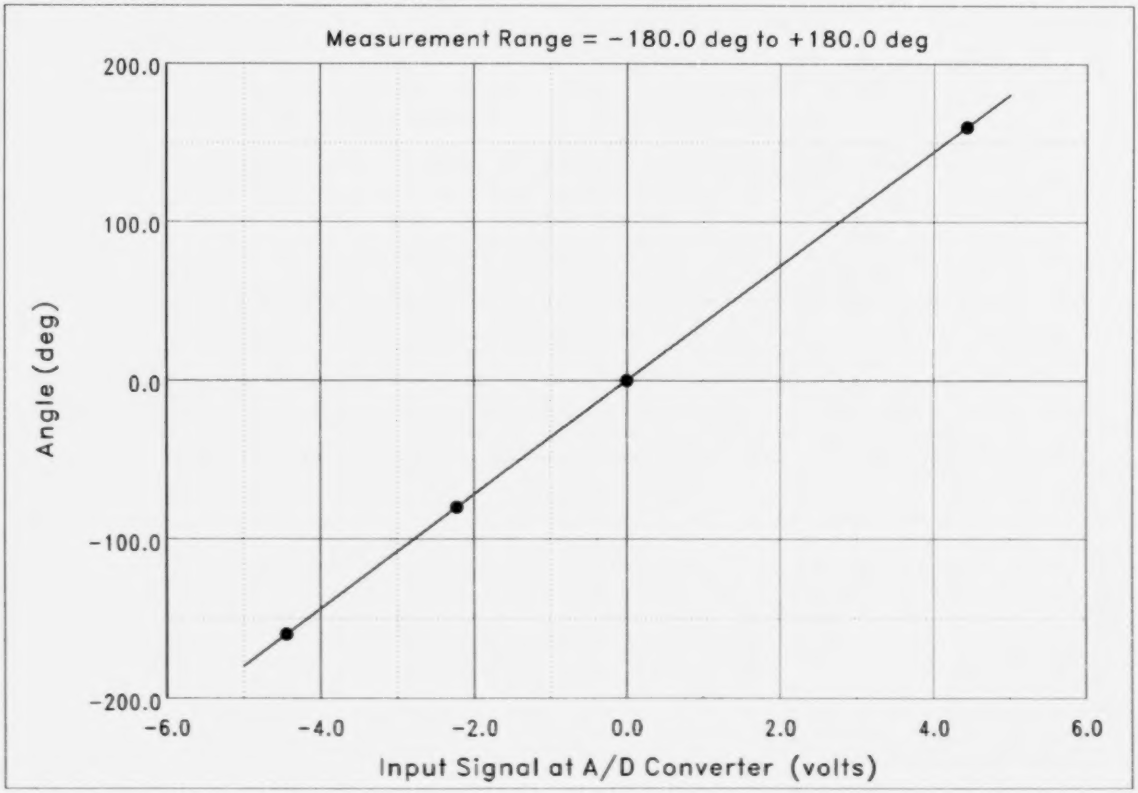
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Angle (deg),

$V(t)$ = input signal at A/D converter (volts),

C_0 = 0.204543 deg,

and C_1 = 36.0441 deg/volt .



Calibration of DASPC2 Channel 13 10:05 14 December 2001

Project: Evacuation Systems

Facility: ocb

Sensor: Roll

Model: Qualisys

Serial Number: d-04

Programmable Gain: 1

Plug-In Gain: 1

Filter Frequency: 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (deg)	Fitted Curve Value (deg)	Error (deg)	
1	−4.443	−160.00	−160.00	−0.0012665	
2	−2.224	−80.00	−80.00	0.0049438	⇐ Maximum Error
3	−0.006	0.00	0.00	−0.0048815	
4	4.432	160.00	160.00	0.0011902	
Maximum Error = 0.00154 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

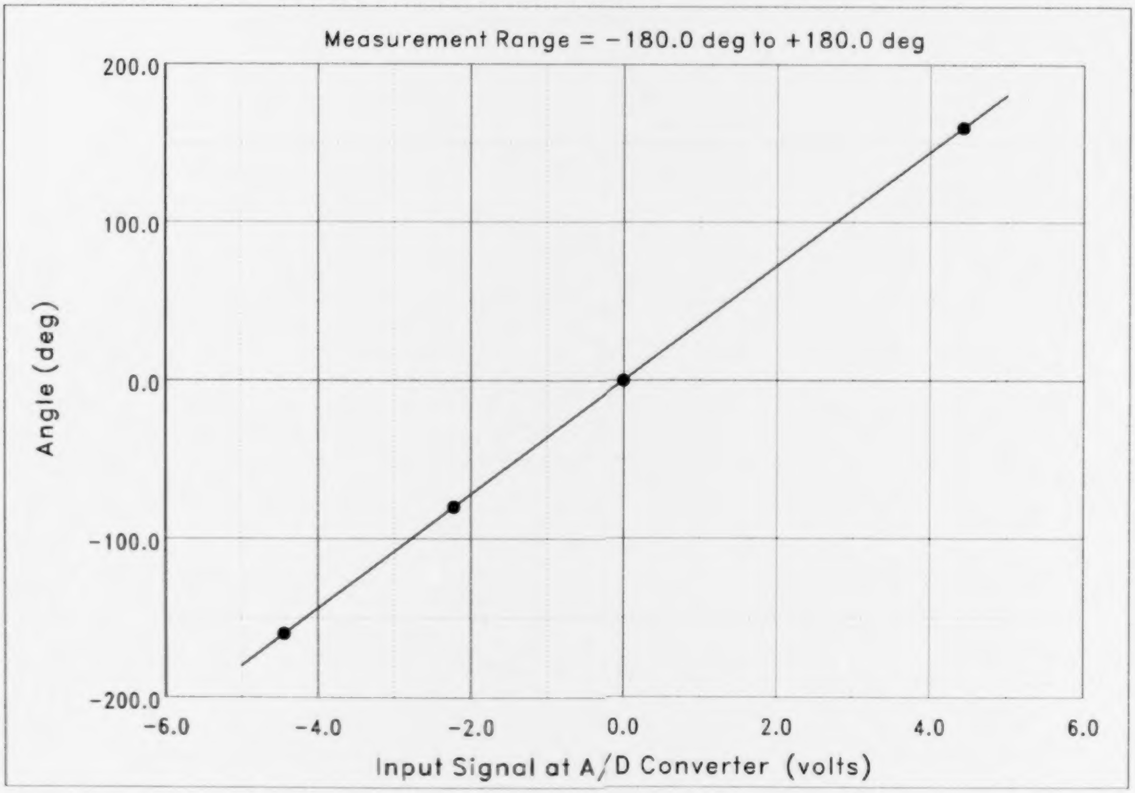
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Angle (deg),

$V(t)$ = input signal at A/D converter (volts),

C_0 = 0.209036 deg,

and C_1 = 36.0574 deg/volt .



Calibration of DASPC2 Channel 15 10:02 14 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Pitch **Model:** Qualisys **Serial Number:** d-06

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (deg)	Fitted Curve Value (deg)	Error (deg)	
1	−4.443	−160.00	−160.00	−0.0023193	
2	−2.225	−80.00	−80.00	0.0028839	⇐ Maximum Error
3	−0.007	0.00	0.00	0.0002810	
4	4.430	160.00	160.00	−0.0008698	
Maximum Error = 0.000901 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

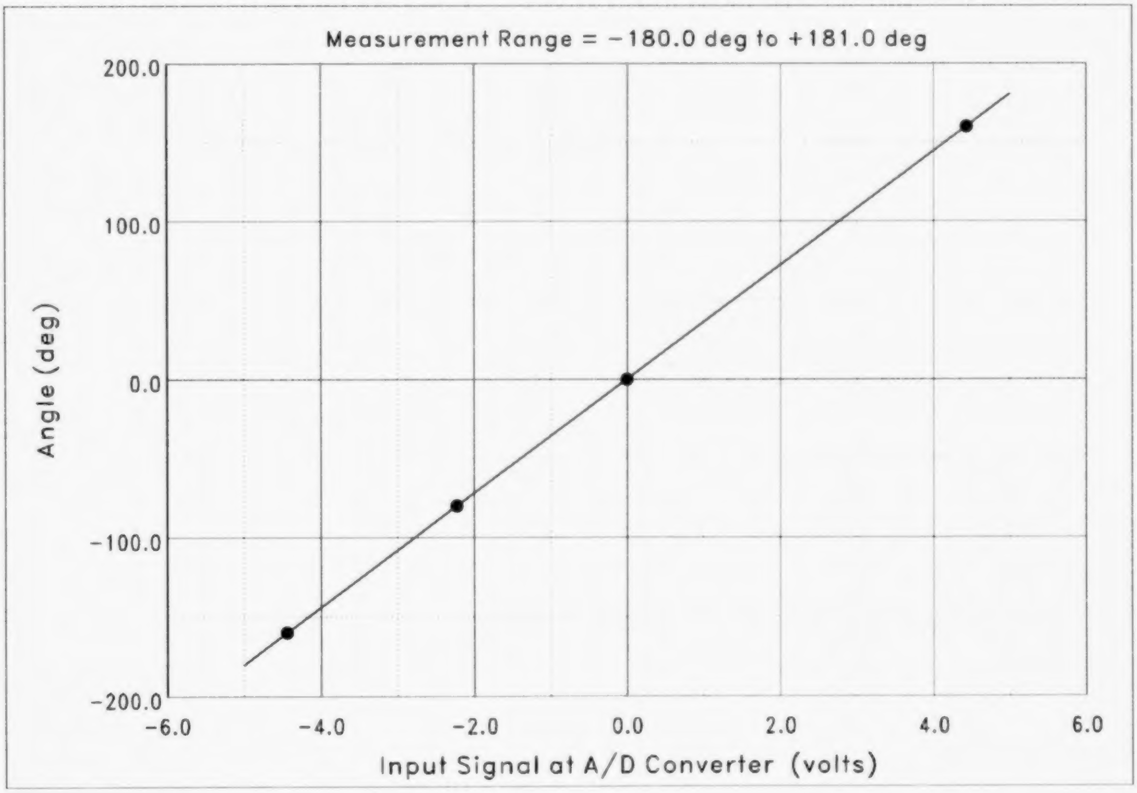
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Angle (deg),

$V(t)$ = input signal at A/D converter (volts),

C_0 = 0.236713 deg,

and C_1 = 36.0675 deg/volt .



Calibration of DASPC2 Channel 16 19:43 03 October 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: RMS **Model:** Qualisys **Serial Number:** d-07

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (mm)	Fitted Curve Value (mm)	Error (mm)	
1	−4.506	1.000	1.000	0.00010204	
2	−2.010	6.000	6.000	−0.00019264	⇐ Maximum Error
3	0.985	12.000	12.000	0.00009537	
4	3.980	18.000	18.000	−0.00000572	
Maximum Error = −0.00113 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

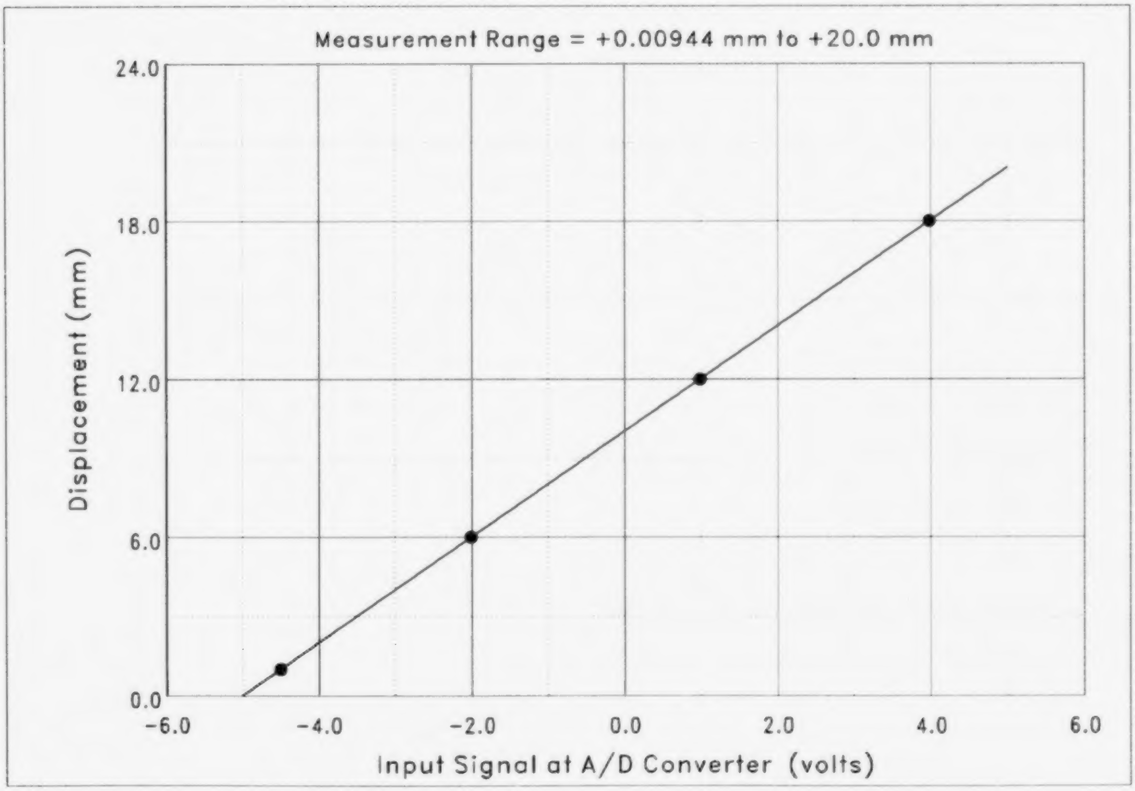
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Displacement (mm),

$V(t)$ = input signal at A/D converter (volts),

C_0 = 10.0267 mm,

and C_1 = 2.00344 mm/volt .



Calibration of DASPC2 Channel 17 18:54 04 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Height (Yo-Yo) **Model:** N/A **Serial Number:** box j-00

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (m)	Fitted Curve Value (m)	Error (m)	
1	0.403	0.3580	0.3573	−0.0007259	
2	0.794	0.5100	0.5102	0.0002424	
3	1.191	0.6650	0.6652	0.0001936	
4	1.534	0.7980	0.7996	0.0016330	⇐ Maximum Error
5	1.909	0.9470	0.9462	−0.0008479	
6	2.282	1.0920	1.0919	−0.0000566	
7	2.759	1.2790	1.2781	−0.0008916	
8	3.468	1.5550	1.5555	0.0004531	
Maximum Error = 0.136 % of Calibration Range.					

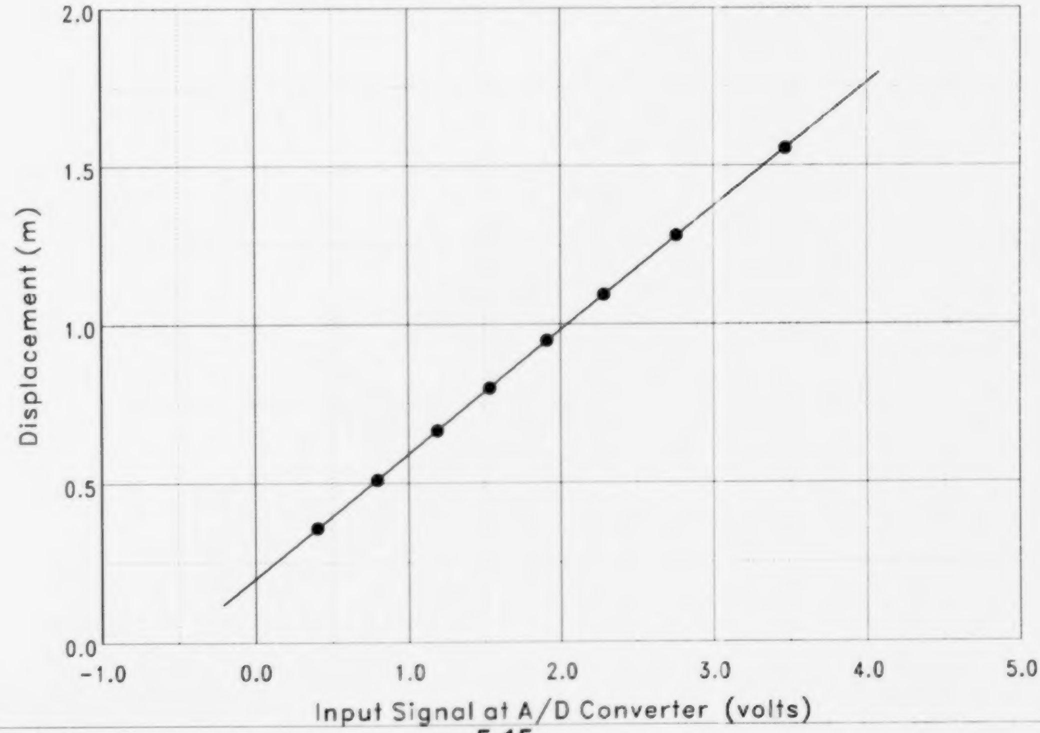
Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Displacement (m),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 0.199826 m,
and C_1 = 0.390884 m/volt .

Measurement Range = −1.75 m to +2.15 m



Calibration of DASPC2 Channel 18 11:07 05 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Wind 1 (Bot) **Model:** Young **Serial Number:** 6 (Box J-01)

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

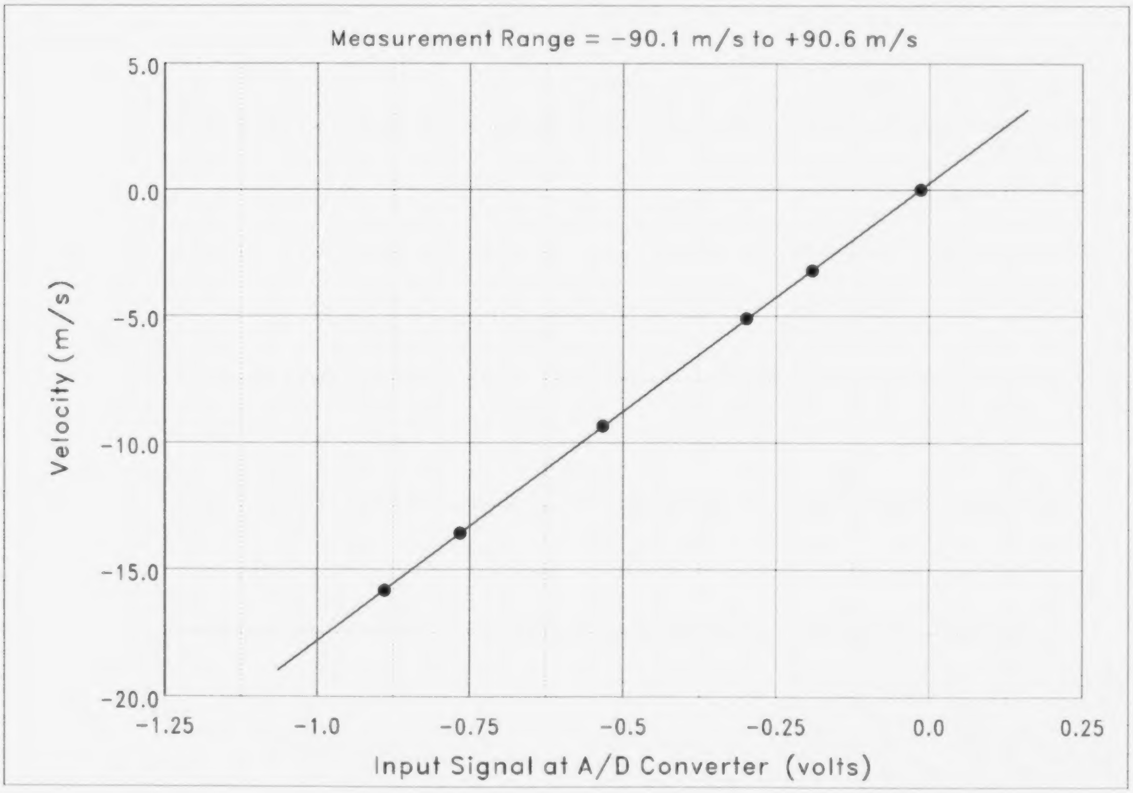
Data Point No.	Input Signal (volts)	Physical Value (m/s)	Fitted Curve Value (m/s)	Error (m/s)	
1	−0.014	0.000	0.017	0.016557	
2	−0.191	−3.200	−3.193	0.006697	
3	−0.298	−5.100	−5.123	−0.022599	⇐ Maximum Error
4	−0.533	−9.350	−9.366	−0.016383	
5	−0.766	−13.575	−13.575	0.000244	
6	−0.889	−15.825	−15.810	0.015485	
Maximum Error = −0.143 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Velocity (m/s),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 0.261106 m/s,
and C_1 = 18.0716 (m/s)/volt .



Calibration of DASPC2 Channel 19 10:50 05 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Wind 2 **Model:** Young **Serial Number:** 9 (Box J-02)

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (m/s)	Fitted Curve Value (m/s)	Error (m/s)	
1	0.006	0.000	−0.005	−0.004823	
2	−0.304	−5.575	−5.566	0.008796	
3	−0.407	−7.425	−7.423	0.002069	
4	−0.529	−9.600	−9.612	−0.012190	
5	−0.768	−13.925	−13.903	0.021955	⇐ Maximum Error
6	−0.883	−15.950	−15.966	−0.015805	
Maximum Error = 0.138 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

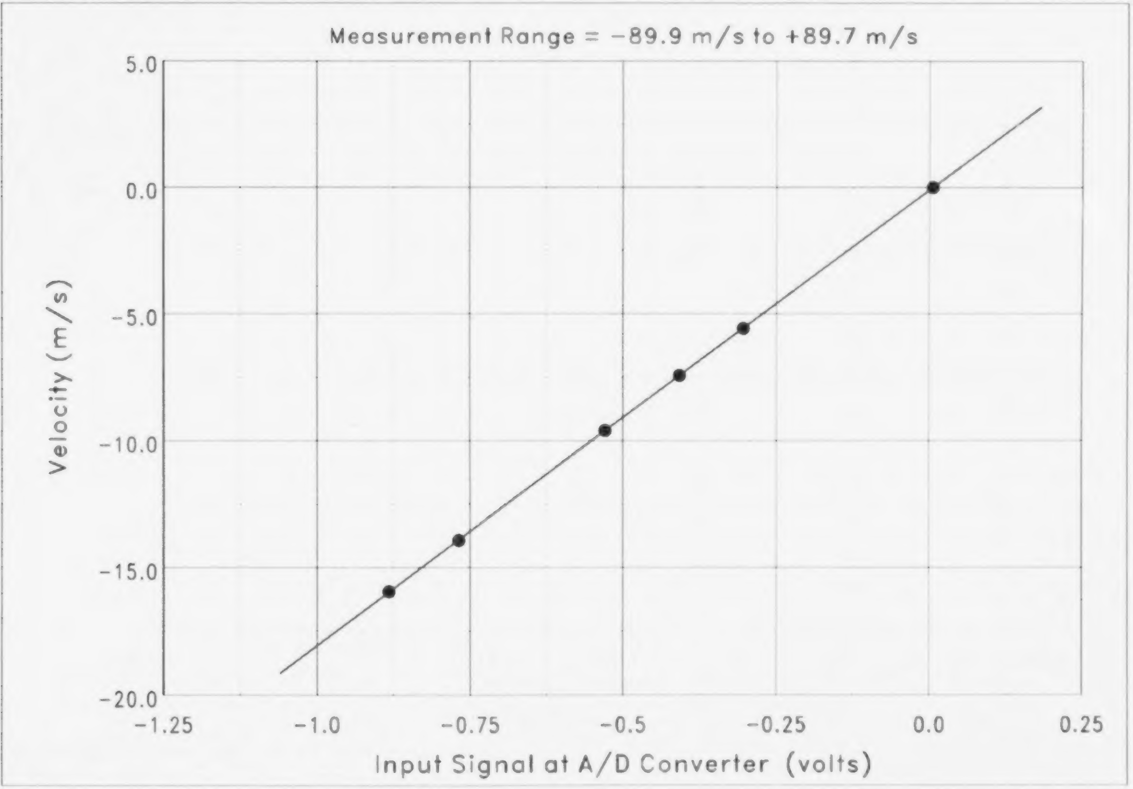
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Velocity (m/s),

$V(t)$ = input signal at A/D converter (volts),

C_0 = −0.103970 m/s,

and C_1 = 17.9649 (m/s)/volt .



Calibration of DASPC2 Channel 20 10:11 05 December 2001

Project: Evacuation Systems **Facility:** ocb

Sensor: wind 3 **Model:** young **Serial Number:** 2 (Box J-03)

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (m/s)	Fitted Curve Value (m/s)	Error (m/s)	
1	0.003	0.000	−0.012	−0.012279	
2	−0.200	−3.650	−3.648	0.002142	
3	−0.309	−5.625	−5.617	0.007531	
4	−0.544	−9.850	−9.835	0.015485	
5	−0.661	−11.920	−11.932	−0.011837	
6	−0.776	−14.025	−14.002	0.022811	
7	−0.885	−15.925	−15.949	−0.023852	⇐ Maximum Error
Maximum Error = −0.150 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

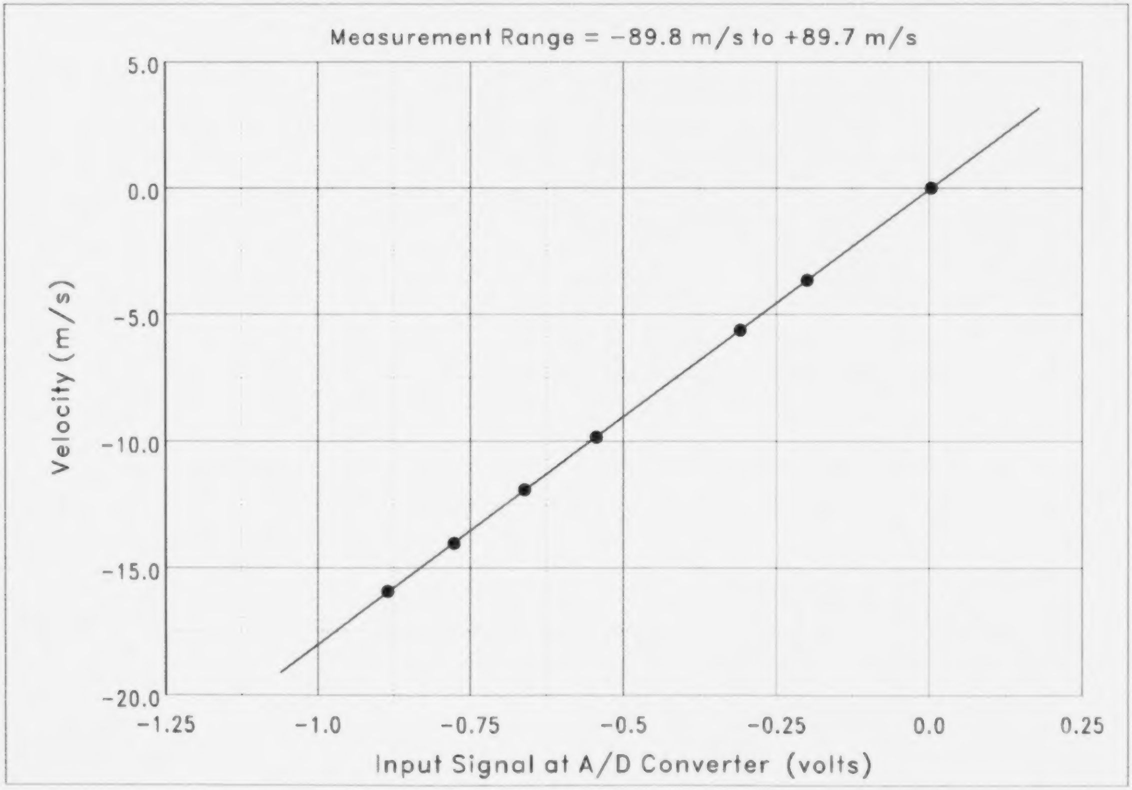
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Velocity (m/s),

$V(t)$ = input signal at A/D converter (volts),

C_0 = −0.0658981 m/s,

and C_1 = 17.9526 (m/s)/volt .



Calibration of DASPC2 Channel 21 10:31 05 December 2001

Project: Evacuation Systems
Facility: oeb

Sensor: Wind 4 top
Model: Young
Serial Number: 10 (Box J-4)

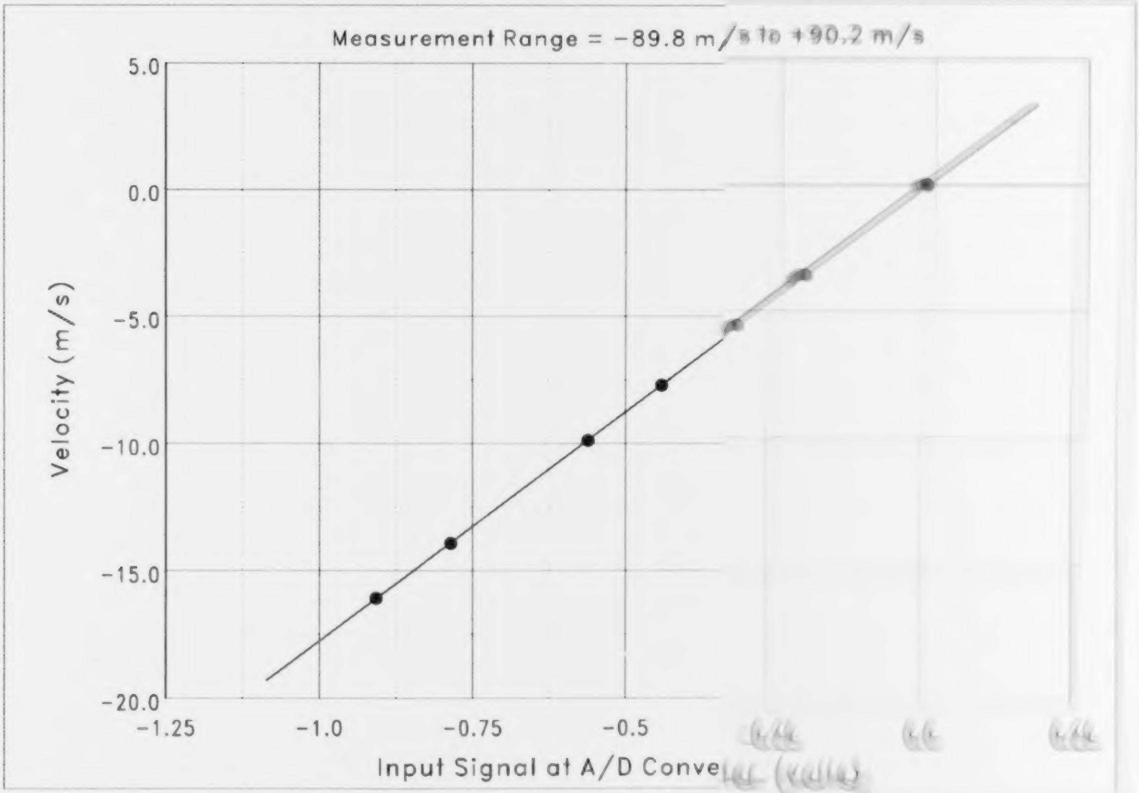
Programmable Gain: 1
Plug-In Gain: 1
Filter Frequency: 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (m/s)	Fitted Curve Value (m/s)	Error (m/s)	
1	−0.013	0.000	−0.003	−0.003065	
2	−0.212	−3.575	−3.577	−0.001647	
3	−0.323	−5.575	−5.584	−0.009269	
4	−0.411	−7.715	−7.702	0.013435	
5	−0.785	−13.925	−13.904	0.020838	
6	−0.907	−16.075	−16.097	−0.021723	⇐ Maximum Error
7	−0.562	−9.875	−9.874	0.001130	
Maximum Error = −0.135 % of Calibration Range.					

Definition of Calibration Curve
Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Velocity (m/s),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 0.232796 m/s,
and C_1 = 17.9978 (m/s)/volt .



Calibration of DASPC2 Channel 23 11:47 05 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Wind 5 removable **Model:** Young **Serial Number:** 5 (Box J-06)

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

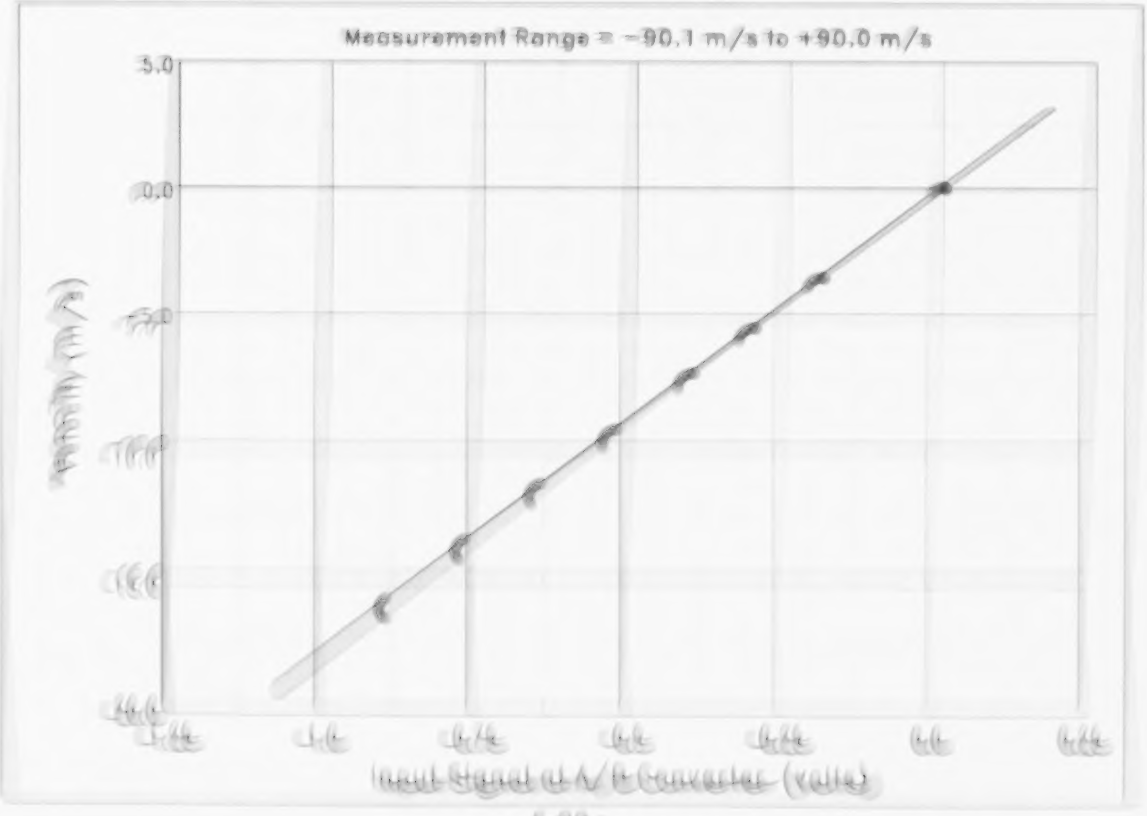
Data Point No.	Input Signal (volts)	Physical Value (m/s)	Fitted Curve Value (m/s)	Error (m/s)	
1	0.003	0.000	0.000	−0.000300	
2	−0.195	−3.575	−3.576	−0.001232	
3	−0.306	−5.575	−5.569	0.005772	
4	−0.405	−7.375	−7.358	0.017207	
5	−0.529	−9.575	−9.589	−0.013702	
6	−0.649	−11.725	−11.743	−0.018088	
7	−0.768	−13.875	−13.885	−0.010086	
8	−0.892	−16.150	−16.130	0.020126	⇐ Maximum Error
Maximum Error = 0.126 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 V$$

where $Y(t)$ = Velocity (m/s),
$V(t)$ = input signal at A/D converter (volts),
C_0 = −0.0618455 m/s,
and C_1 = 18.0035 (m/s)/volt .



Calibration of DASPC2 Channel 24 12:06 06 December 2001

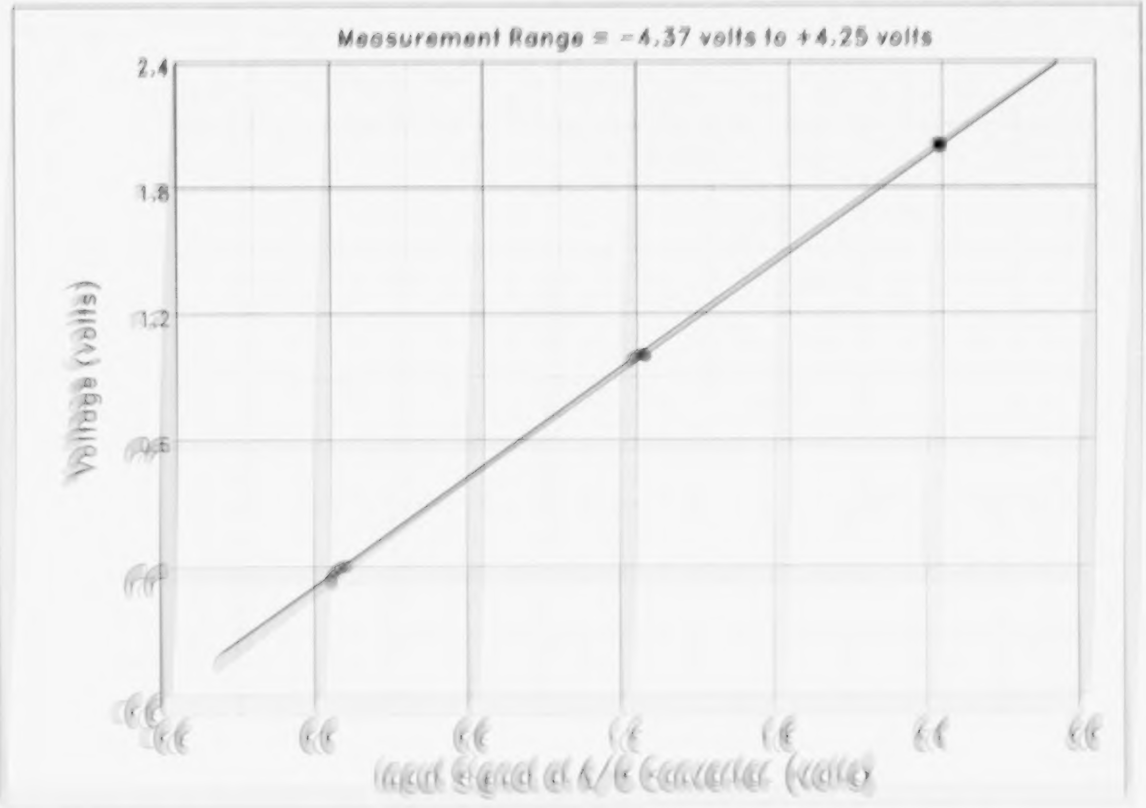
Project:	Evacuation Systems			**Facility:**	oeb
Sensor:	Lifeboat Immersion	**Model:**	Lifeboat feedback	**Serial Number:**	box j-07
Programmable Gain:	1	**Plug-In Gain:**	1	**Filter Frequency:**	100.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (volts)	Fitted Curve Value (volts)	Error (volts)	
1	0.068	0.0000	−0.0009	−0.0008662	
2	1.232	1.0000	1.0017	0.0017370	⇐ Maximum Error
3	2.389	2.0000	1.9991	−0.0008706	
Maximum Error = 0.0868 % of Calibration Range.					

Definition of Calibration Curve
Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Voltage (volts),
$V(t)$ = input signal at A/D converter (volts),
C_0 = −0.0595278 volts,
and C_1 = 0.861763 volts/volt .



Calibration of DASPC2 Channel 25 12:10 06 December 2001

Project: Evacuation Systems **Facility:** ocb

Sensor: Davit Release **Model:** Lifeboat feedback **Serial Number:** box j-08

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

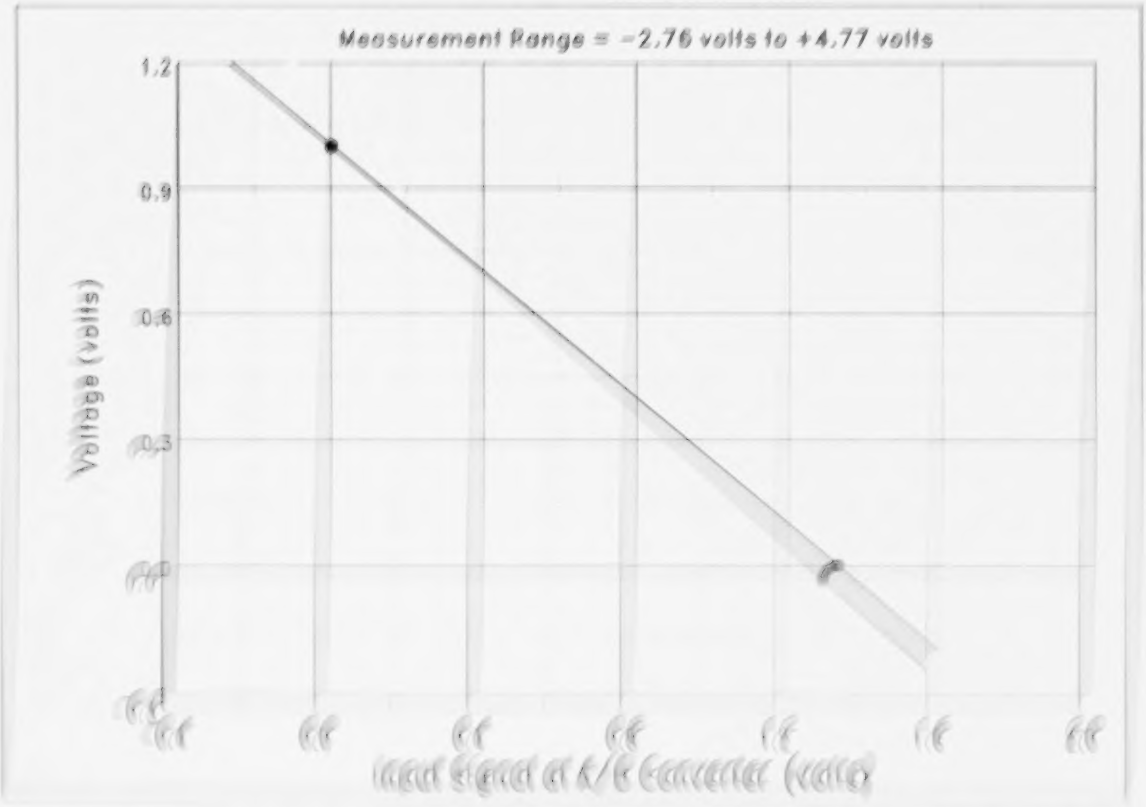
Data Point No.	Input Signal (volts)	Physical Value (volts)
1	1.331	0.0000
2	0.001	1.0000

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Voltage (volts),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 1.00278 volts,
and C_1 = −0.753185 volts/volt .



Calibration of DASPC2 Channel 26 14:39 06 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Rudder Angle **Model:** Lifeboat feedback **Serial Number:** box j-09

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (deg)	Fitted Curve Value (deg)	Error (deg)	
1	2.421	10.000	10.515	0.5148	
2	1.886	20.000	18.870	−1.1301	
3	3.730	−10.000	−9.913	0.0874	
4	4.423	−20.000	−20.733	−0.7326	
5	3.014	0.000	1.260	1.2605	⇐ Maximum Error

Maximum Error = 3.15 % of Calibration Range.

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

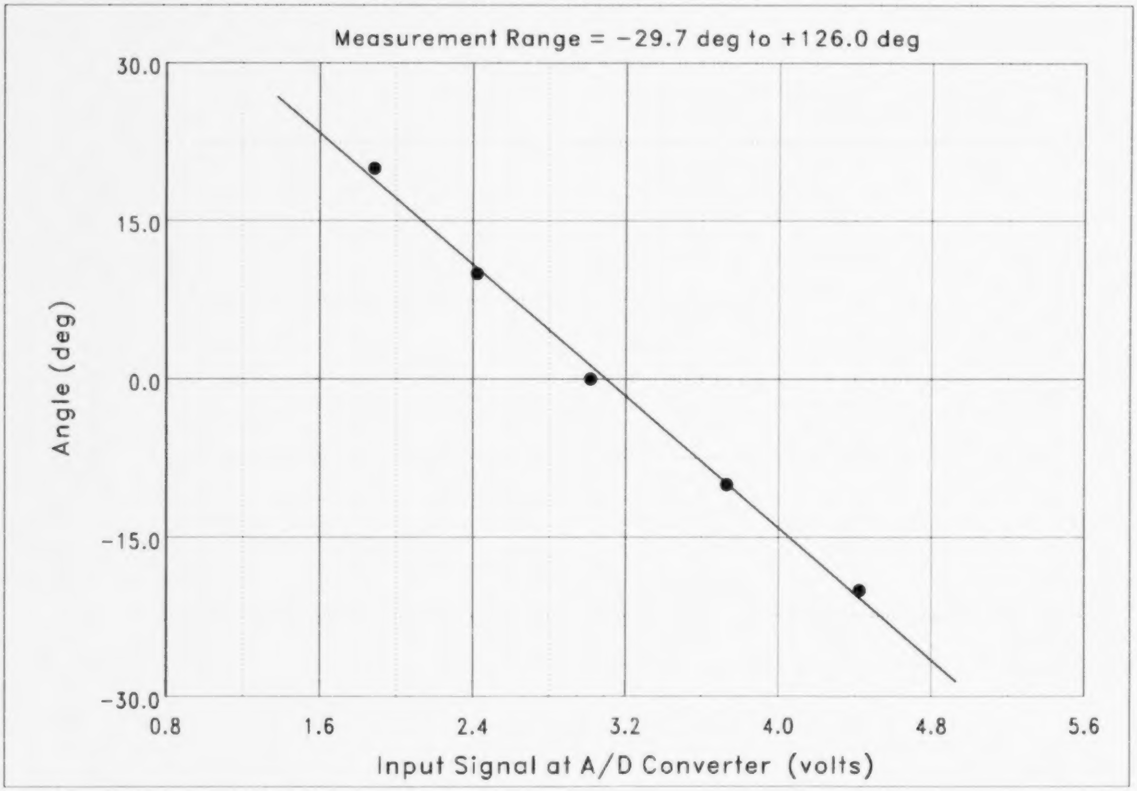
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Angle (deg),

$V(t)$ = input signal at A/D converter (volts),

C_0 = 48.3118 deg,

and C_1 = −15.6091 deg/volt .



Calibration of DASPC2 Channel 27 12:19 03 October 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Natural Frequency X **Model:** 979-1400-001 **Serial Number:** 2150 box j-10

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 100.0 Hz

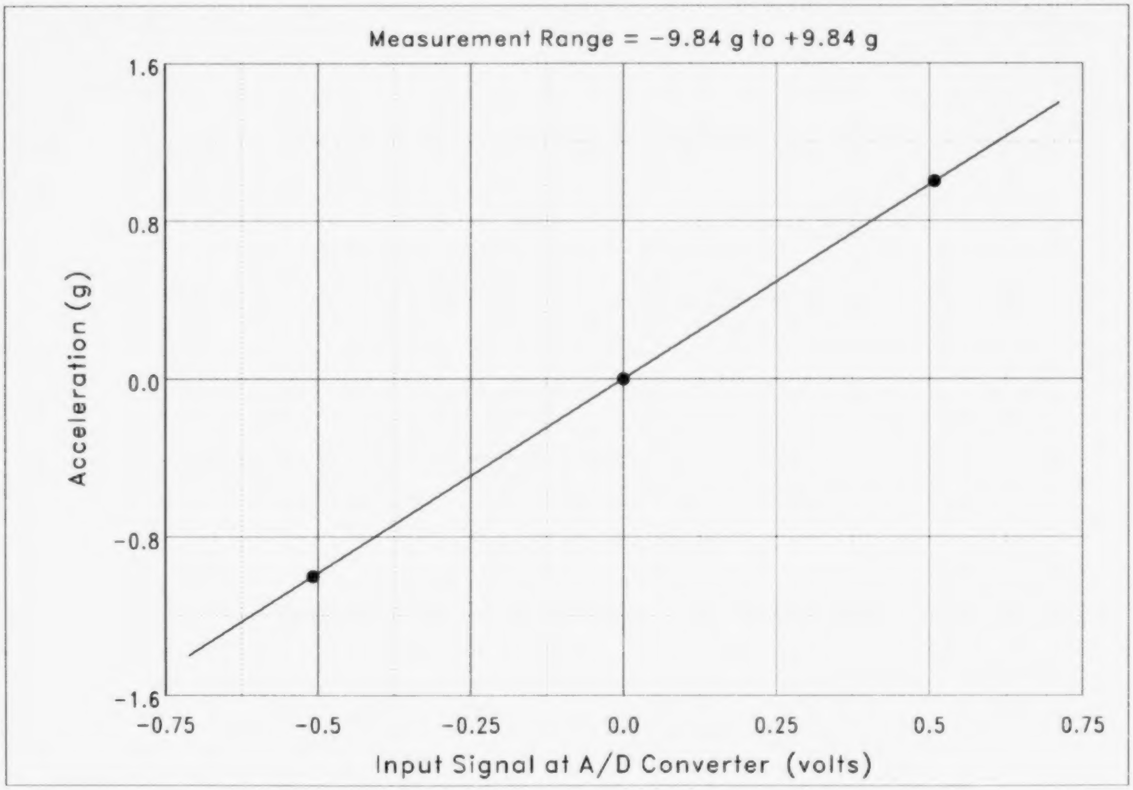
Data Point No.	Input Signal (volts)	Physical Value (g)	Fitted Curve Value (g)	Error (g)	
1	0.000	0.0000	0.0002	0.00020916	⇐ Maximum Error
2	0.508	1.0000	0.9999	−0.00010461	
3	−0.508	−1.0000	−1.0001	−0.00010455	
Maximum Error = 0.0105 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Acceleration (g),
$V(t)$ = input signal at A/D converter (volts),
C_0 = −0.000289137 g,
and C_1 = 1.96721 g/volt .



Calibration of DASPC2 Channel 28 12:24 03 October 2001

Project:	Evacuation Systems			**Facility:**	oeb
Sensor:	Natural Frequency Y	**Model:**	979-1400-001	**Serial Number:**	1918 box j-11
Programmable Gain:	1	**Plug-In Gain:**	1	**Filter Frequency:**	100.0 Hz

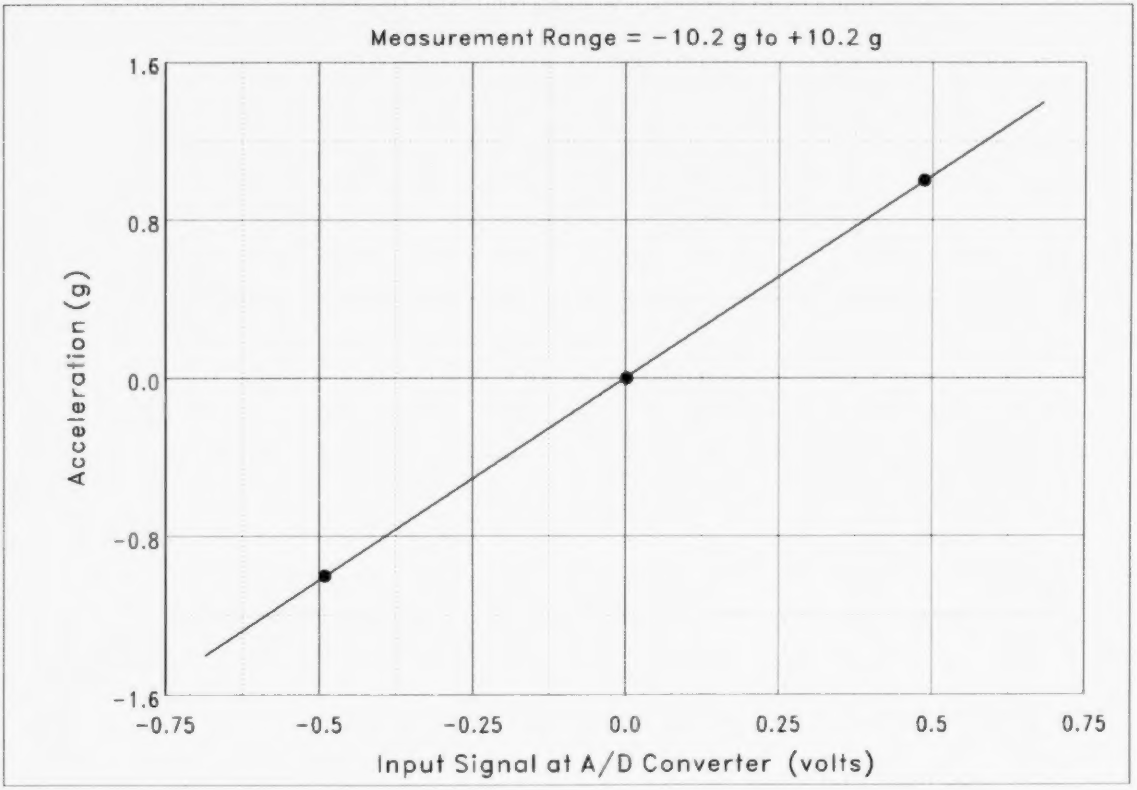
Data Point No.	Input Signal (volts)	Physical Value (g)	Fitted Curve Value (g)	Error (g)	
1	0.002	0.0000	0.0052	0.0051839	⇐ Maximum Error
2	0.487	1.0000	0.9974	−0.0026121	
3	−0.490	−1.0000	−1.0026	−0.0025718	
Maximum Error = 0.259 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Acceleration (g),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 0.00122414 g,
and C_1 = 2.04737 g/volt .



Calibration of DASPC2 Channel 29 12:26 03 October 2001

Project:	Evacuation Systems			**Facility:**	oeb
Sensor:	Natural Frequency Z	**Model:**	979-1400-001	**Serial Number:**	948 box j-12
Programmable Gain:	1	**Plug-In Gain:**	1	**Filter Frequency:**	100.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (g)	Fitted Curve Value (g)	Error (g)	
1	−0.008	0.0000	0.0036	0.0036180	⇐ Maximum Error
2	−0.522	−1.0000	−1.0018	−0.0017992	
3	0.499	1.0000	0.9982	−0.0018188	
Maximum Error = 0.181 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

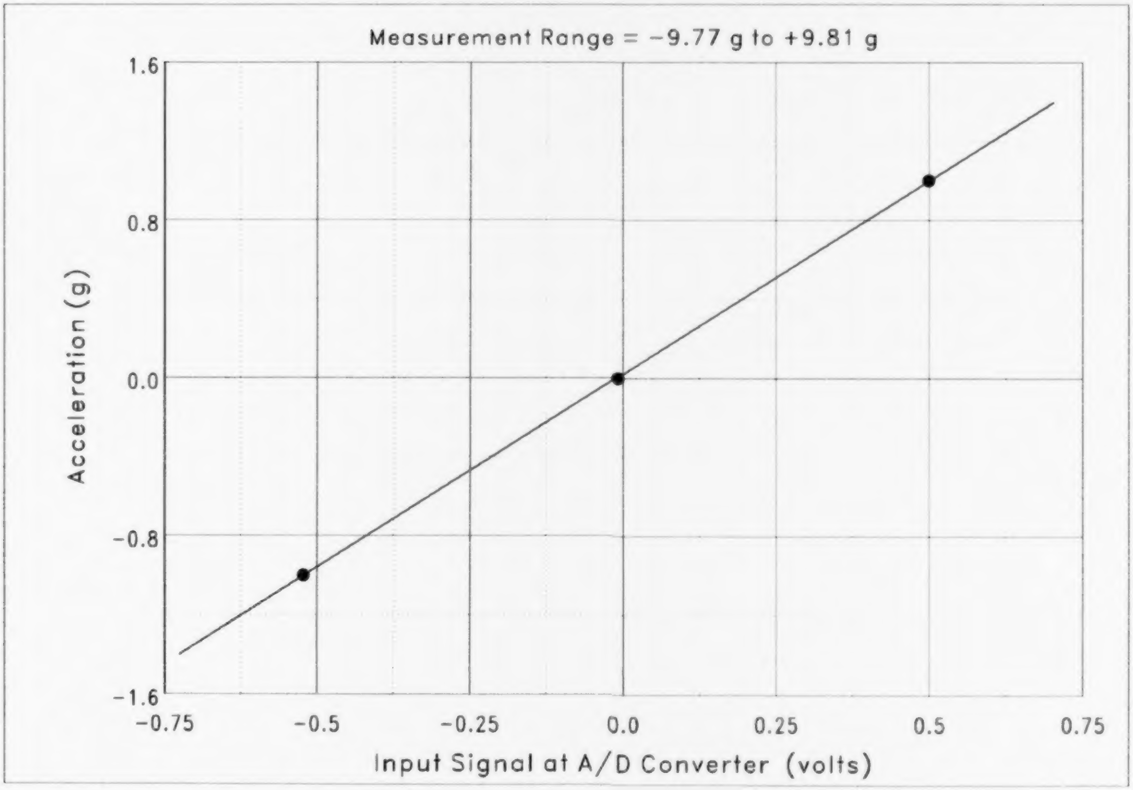
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Acceleration (g),

$V(t)$ = input signal at A/D converter (volts),

C_0 = 0.0200803 g,

and C_1 = 1.95818 g/volt .



Calibration of DASPC2 Channel 30 11:36 06 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: Lifeboat Accel X **Model:** Lifeboat feedback **Serial Number:** box j-13

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 100.0 Hz

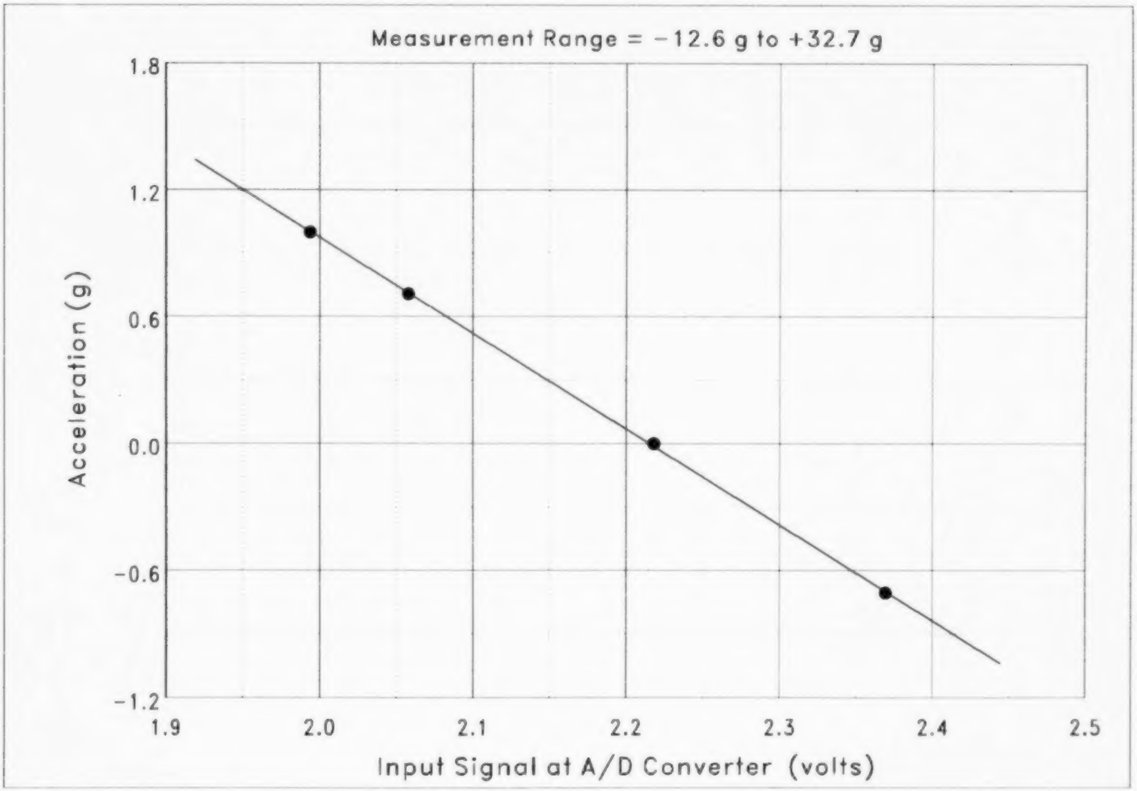
Data Point No.	Input Signal (volts)	Physical Value (g)	Fitted Curve Value (g)	Error (g)	
1	2.218	0.0000	−0.0141	−0.014121	⇐ Maximum Error
2	1.994	1.0000	1.0015	0.001466	
3	2.369	−0.7070	−0.6994	0.007566	
4	2.058	0.7070	0.7121	0.005090	
Maximum Error = −0.827 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Acceleration (g),
$V(t)$ = input signal at A/D converter (volts),
C_0 = 10.0365 g,
and C_1 = −4.53119 g/volt .



Calibration of DASPC2 Channel 31 11:49 06 December 2001

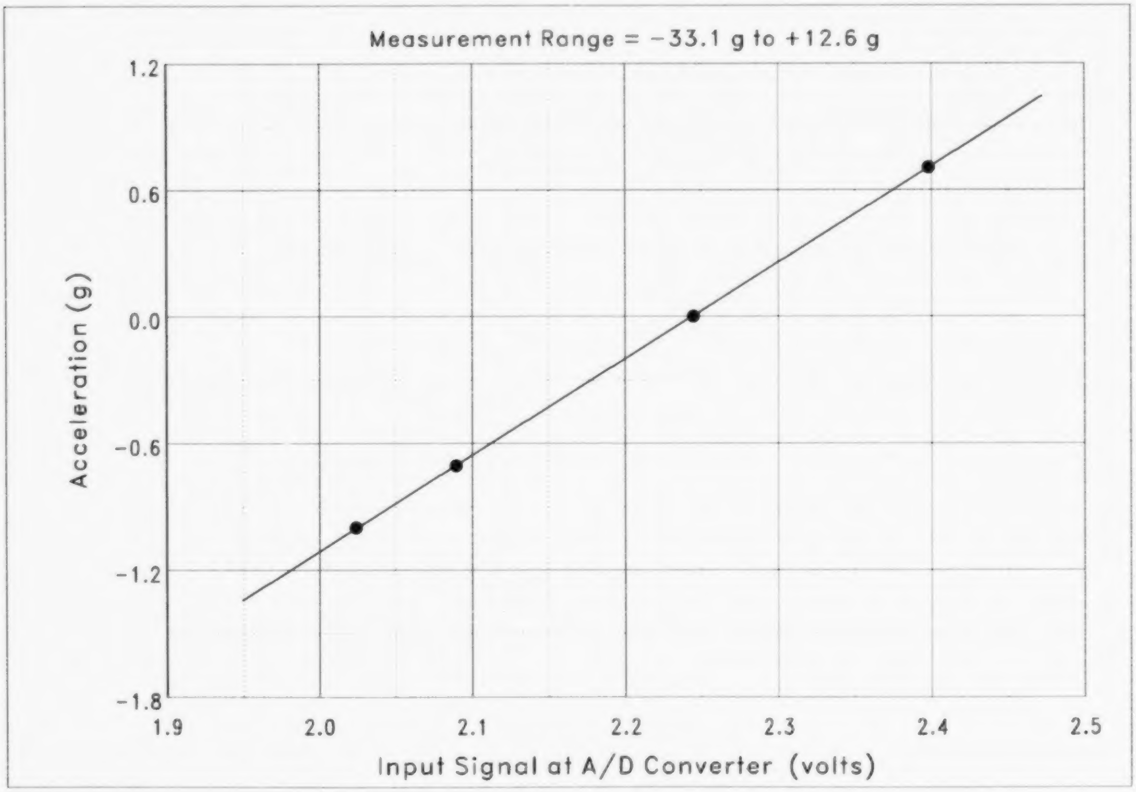
Project: Evacuation Systems
Facility: oeb
Sensor: Lifeboat Accel Y
Model: Lifeboat Feedback
Serial Number: box j-14
Programmable Gain: 1
Plug-In Gain: 1
Filter Frequency: 100.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (g)	Fitted Curve Value (g)	Error (g)	
1	2.245	0.0000	0.0011	0.0011155	⇐ Maximum Error
2	2.024	−1.0000	−1.0035	−0.0034914	
3	2.089	−0.7070	−0.7050	0.0020392	
4	2.398	0.7070	0.7040	−0.0029624	
Maximum Error = 0.259 % of Calibration Range.					

Definition of Calibration Curve
Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Acceleration (g),
$V(t)$ = input signal at A/D converter (volts),
C_0 = −10.2462 g,
and C_1 = 4.56661 g/volt .



Calibration of DASPC2 Channel 32 11:59 06 December 2001

Project:	Evacuation Systems			**Facility:**	oeb
Sensor:	Lifeboat Accel Z	**Model:**	Lifeboat Feedback	**Serial Number:**	box j-15
Programmable Gain:	1	**Plug-In Gain:**	1	**Filter Frequency:**	100.0 Hz

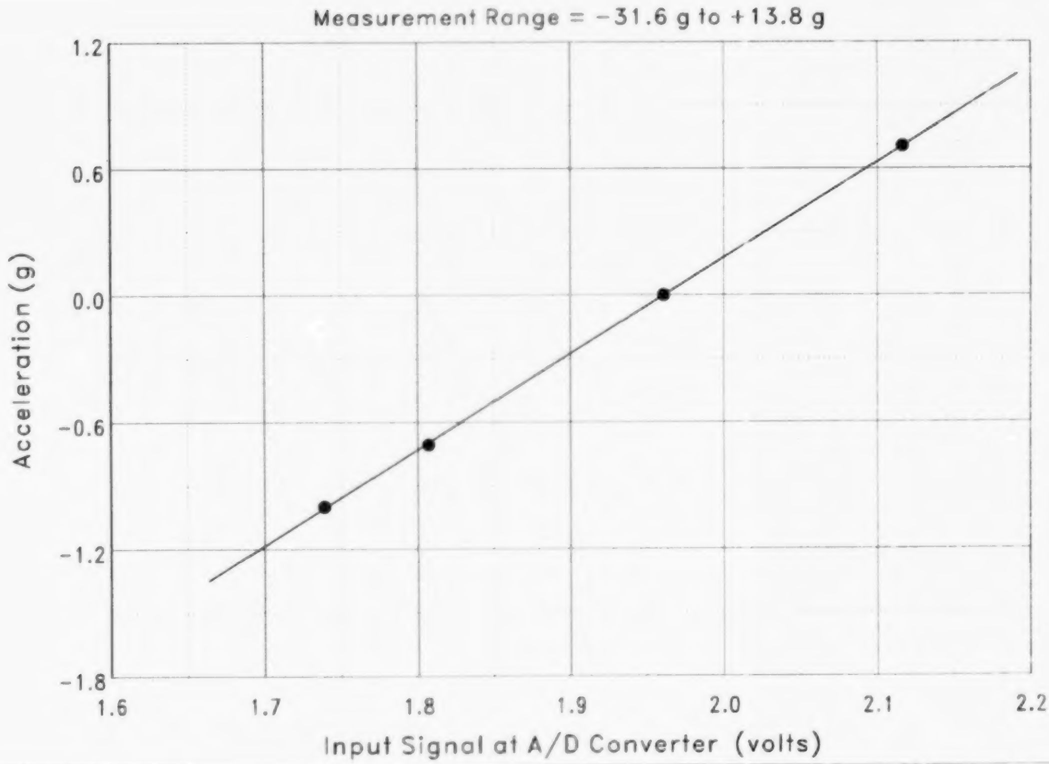
Data Point No.	Input Signal (volts)	Physical Value (g)	Fitted Curve Value (g)	Error (g)	
1	1.961	0.0000	0.0005	0.0005455	
2	1.739	−1.0000	−1.0073	−0.0073471	
3	1.807	−0.7070	−0.6983	0.0086901	⇐ Maximum Error
4	2.116	0.7070	0.7051	−0.0018904	
Maximum Error = 0.509 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Acceleration (g),
$V(t)$ = input signal at A/D converter (volts),
C_0 = −8.89732 g,
and C_1 = 4.53755 g/volt .



Calibration of DASPC2 Channel 33 13:17 05 December 2001

Project: Evacuation Systems **Facility:** oeb

Sensor: wind load **Model:** 60811-50 **Serial Number:** A10293 i-00

Programmable Gain: 1 **Plug-In Gain:** 200 **Filter Frequency:** 100.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (N)	Fitted Curve Value (N)	Error (N)	
1	−1.275	2.9424	2.9389	−0.003458	
2	−1.459	3.92232	3.9070	−0.016155	
3	−1.657	4.9040	4.9403	0.036297	⇐ Maximum Error
4	−2.019	6.8656	6.8409	−0.024669	
5	−2.213	7.8464	7.8544	0.007986	
Maximum Error = 0.740 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

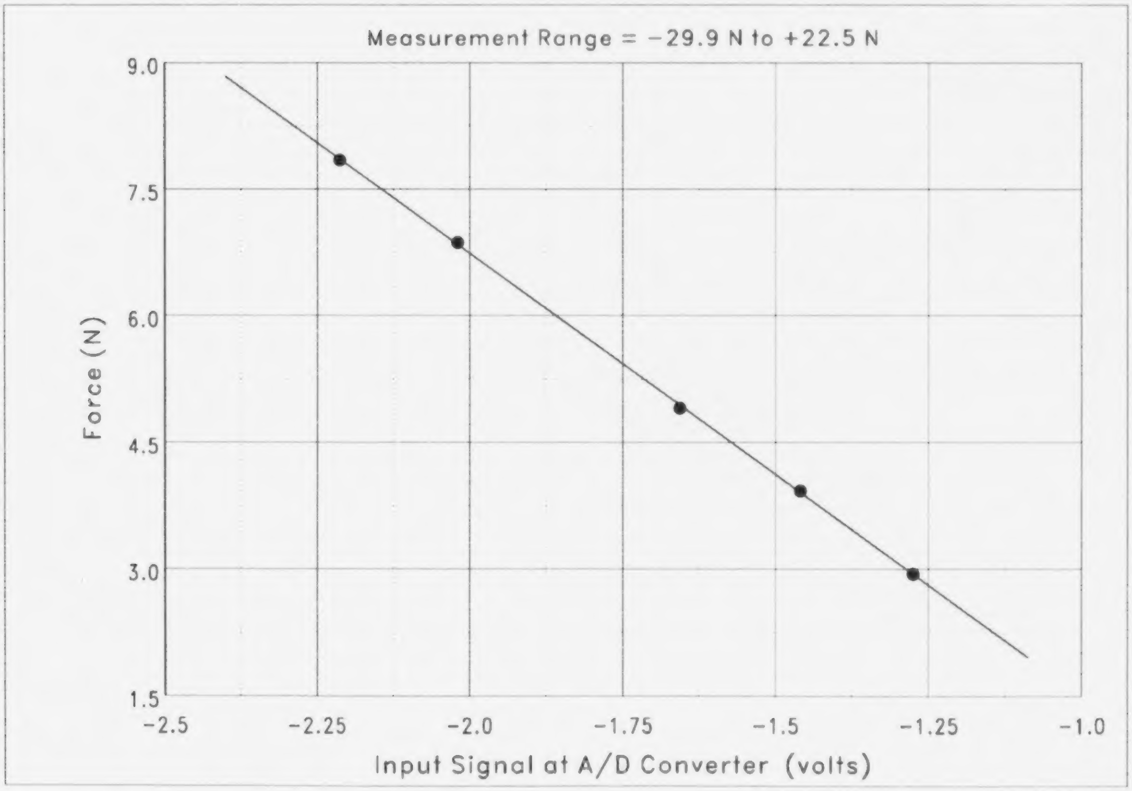
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Force (N),

$V(t)$ = input signal at A/D converter (volts),

C_0 = −3.74067 N,

and C_1 = −5.24000 N/volt .



Calibration of DASPC2 Channel 34 — 19:36 11 December 2001

Project: Evacuation Systems
Facility: oeb

Sensor: Outboard Davit Load
Model: N/A
Serial Number: box i-1

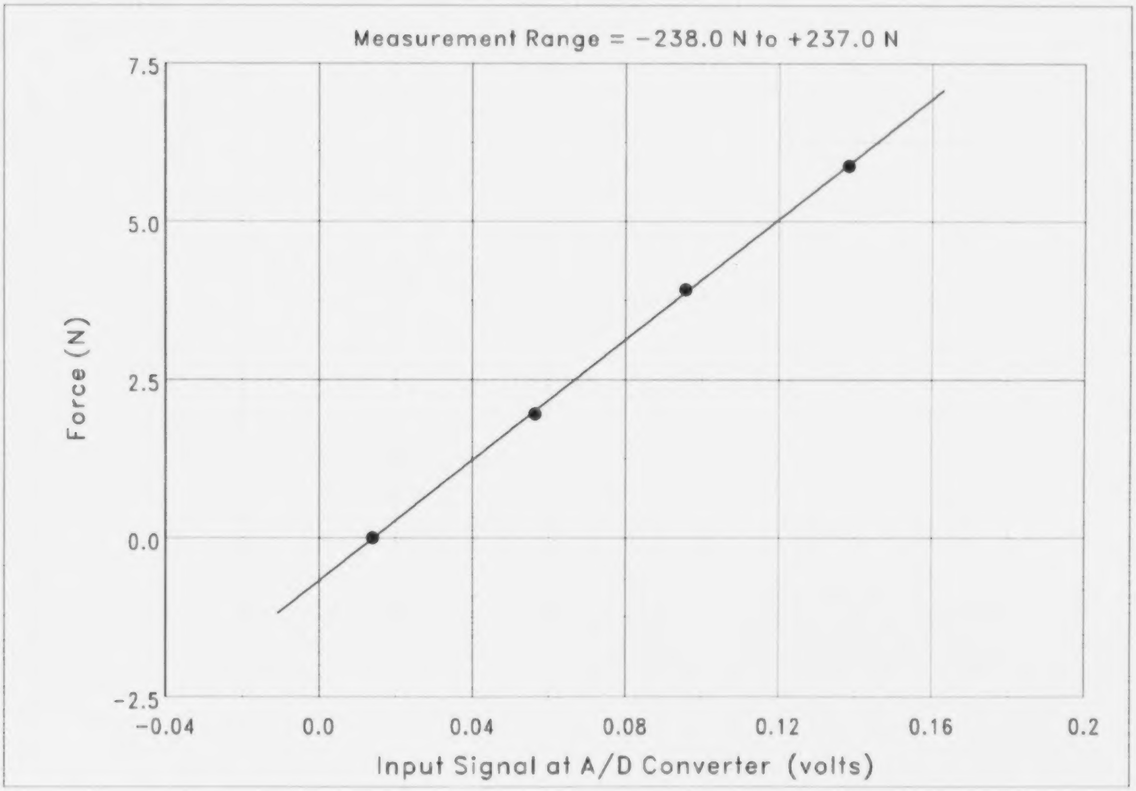
Programmable Gain: 1
Plug-In Gain: 200
Filter Frequency: 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (N)	Fitted Curve Value (N)	Error (N)	
1	0.014	0.0000	−0.0125	−0.012517	
2	0.056	1.9610	2.0031	0.042128	
3	0.138	5.8800	5.8950	0.014959	
4	0.096	3.9200	3.8754	−0.044569	⇐ Maximum Error
Maximum Error = −0.758 % of Calibration Range.					

Definition of Calibration Curve
Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Force (N),
$V(t)$ = input signal at A/D converter (volts),
C_0 = -0.675953 N,
and C_1 = 47.5606 N/volt .



Calibration of DASPC2 Channel 35 19:26 11 December 2001

Project: Evacuation Systems

Facility: oeb

Sensor: Inboard Davit Load

Model: N/A

Serial Number: box i-02

Programmable Gain: 1

Plug-In Gain: 200

Filter Frequency: 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (N)	Fitted Curve Value (N)	Error (N)	
1	−0.115	0.0000	0.0165	0.016531	
2	−0.094	0.9808	0.9973	0.016530	
3	0.011	5.8848	5.8965	0.011713	
4	−0.074	1.9616	1.9168	−0.044775	⇐ Maximum Error
Maximum Error = −0.761 % of Calibration Range.					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

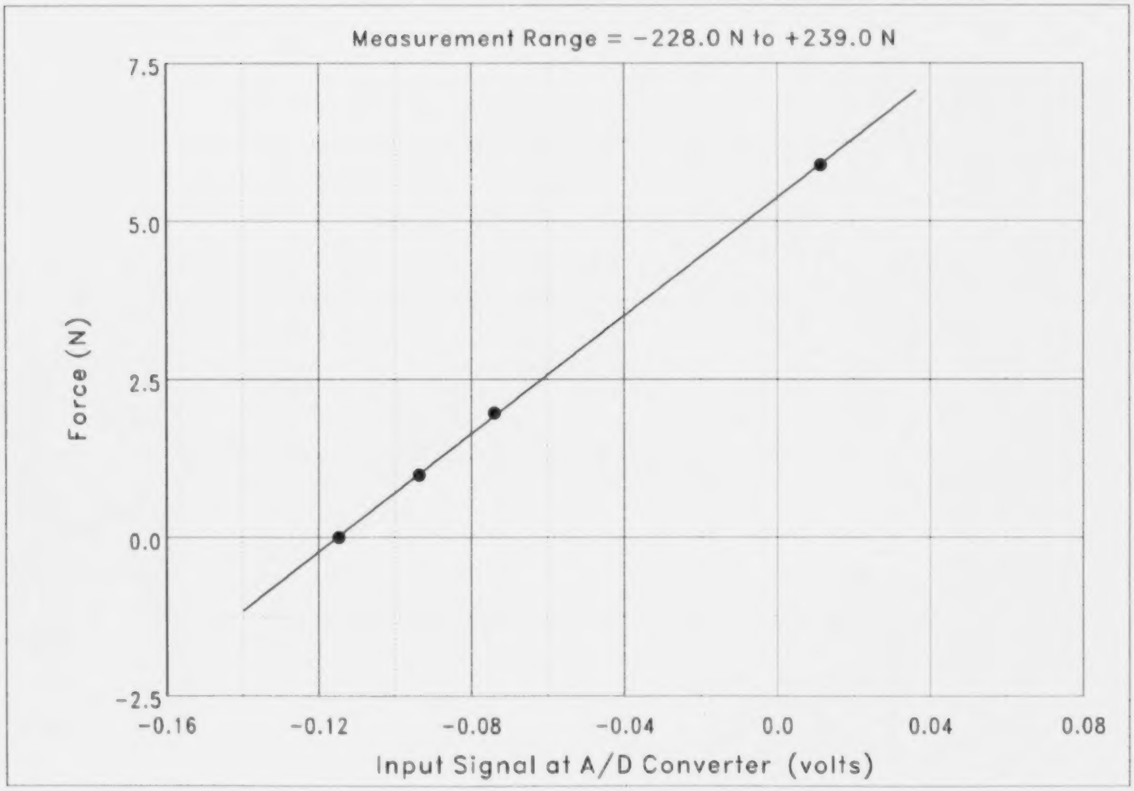
$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Force (N).

$V(t)$ = input signal at A/D converter (volts).

C_0 = 5.37120 N.

and C_1 = 46.6969 N/volt .


Measurement Range = −228.0 N to +239.0 N

Calibration of DASPC2 Channel 36 18:42 04 December 2001

Project: Evacuation Systems
Facility: [illegible]

Sensor: Bollard pull
Model: IMD50LB
Serial Number: A10839103

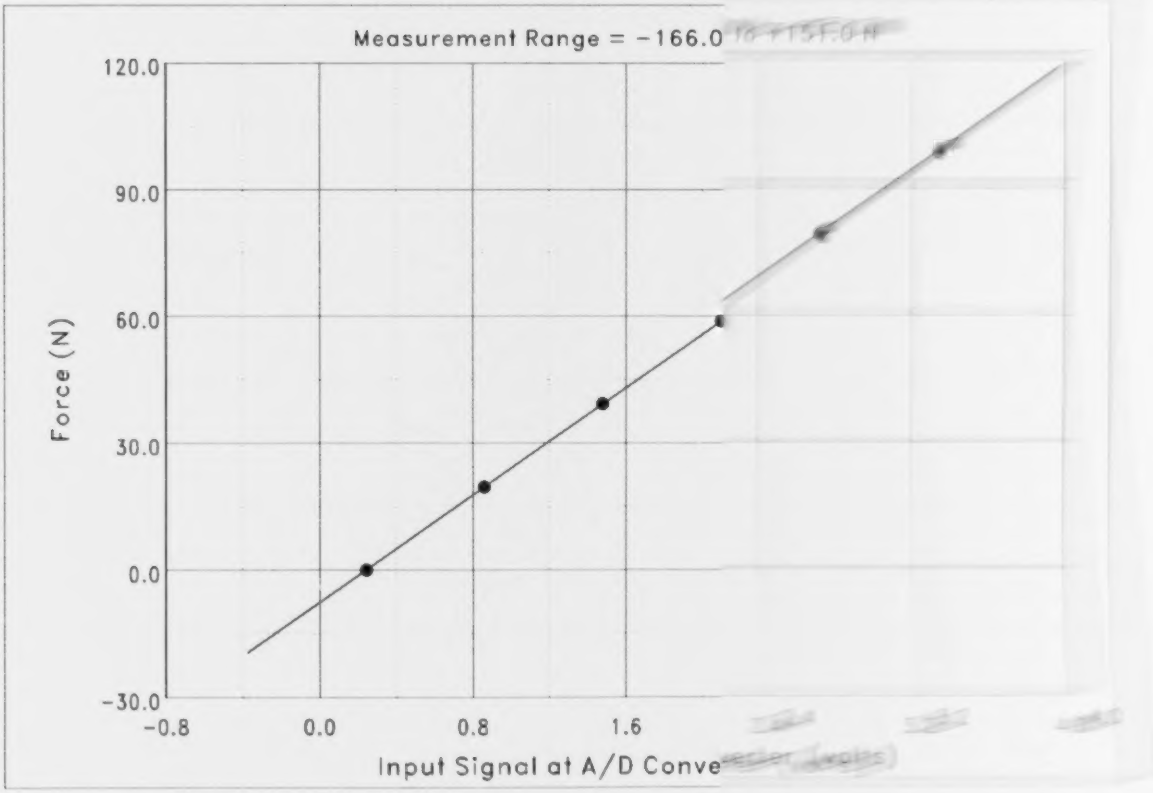
Programmable Gain: 1
Plug-In Gain: 200
Filter Frequency: 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (N)	Fitted Curve Value (N)	Error (N)	
1	0.244	0.000	0.085	0.0850799	= Maximum Error
2	0.858	19.616	19.557	−0.0591771	
3	1.479	39.232	39.212	−0.0201388	
4	2.097	58.848	58.783	−0.0647339	
5	2.719	78.464	78.466	0.0021444	
6	3.340	98.080	98.137	0.0568224	
Maximum Error = 0.0867 % of Calibration Range					

Definition of Calibration Curve
Polynomial Degree = 1 (Linear Fit)

$$Y = C_0 + C_1 \cdot V$$

where $Y(t)$ = Force (N),
$V(t)$ = input signal at A/D converter (volts),
C_0 = −7.62787 N,
and C_1 = 31.6679 N/volt .



Calibration of DASPC3 Channel 4[illegible] 15:55 12 December 2001

Project: Evacuation Systems **Facility:** [illegible]

Sensor: [illegible] **Model:** N/A **Serial Number:** N/A

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (cm)	Fitted Curve Value (cm)	Error (cm)	
1	[illegible]	[illegible]	[illegible]	[illegible]	
2	[illegible]	[illegible]	[illegible]	[illegible]	
3	[illegible]	110.70	[illegible]	[illegible]	= Maximum Error
4	[illegible]	176.00	[illegible]	[illegible]	
Maximum Error = [illegible] % of Calibration Range					

Definition of Calibration Curve

Polynomial Degree = 1 (Linear Fit)

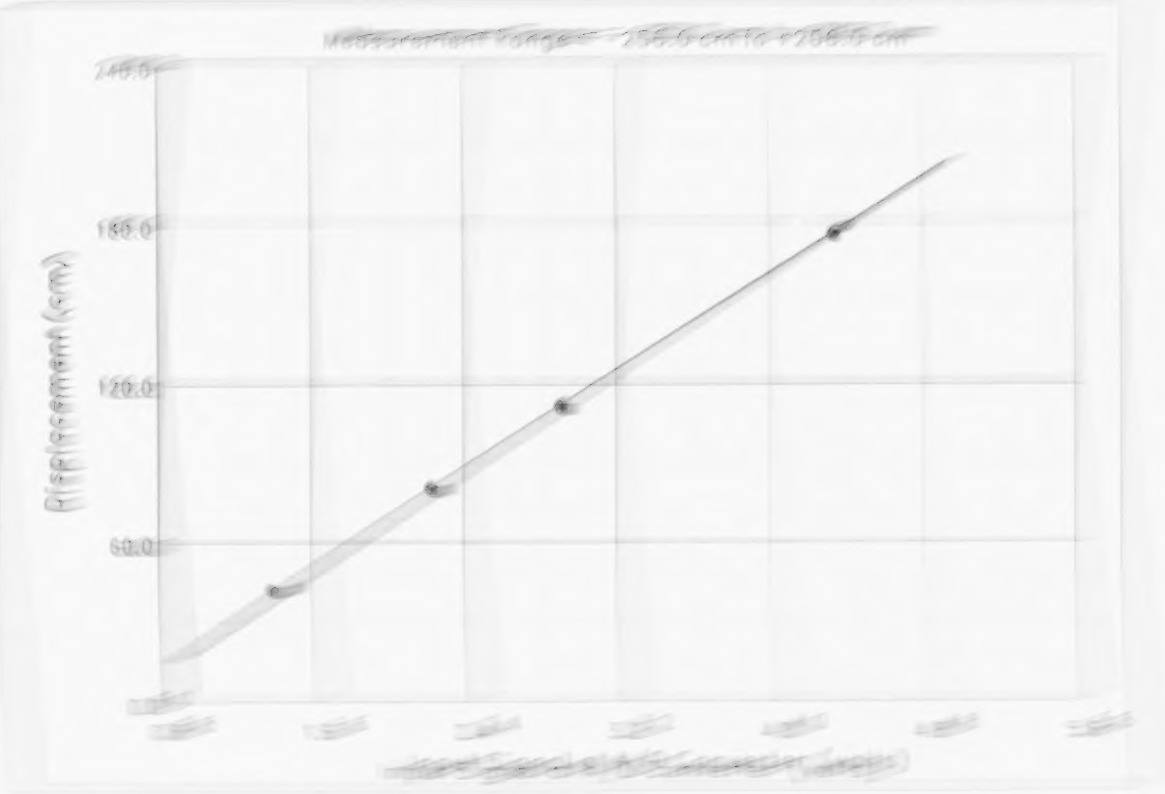
[illegible]

where [illegible] = Displacement (cm)

[illegible] = [illegible]

[illegible] = [illegible]

[illegible] = [illegible]



Calibration of DASPC [illegible] Channel [illegible] [illegible] [illegible] December 2001

Project: Evacuation Systems **Facility:** [illegible]

Sensor: Auto launch **Model:** N/A **Serial Number:** N/A

Programmable Gain: 1 **Plug-In Gain:** 1 **Filter Frequency:** 10.0 Hz

Data Point No.	Input Signal (volts)	Physical Value (volts)	Fitted Curve Value (volts)	Error (volts)	
1	0.003	0.0000	-0.0001	-0.0000[illegible]311	
2	1.1[illegible]	1.0000	1.0001	0.0001[illegible]	= Maximum Error
3	2.1[illegible]	2.0000	1.9999	-0.0000[illegible]308	
Maximum Error = [illegible] % of Calibration Range					

Definition of Calibration Curve

Polynomial Degree = 1 [illegible]

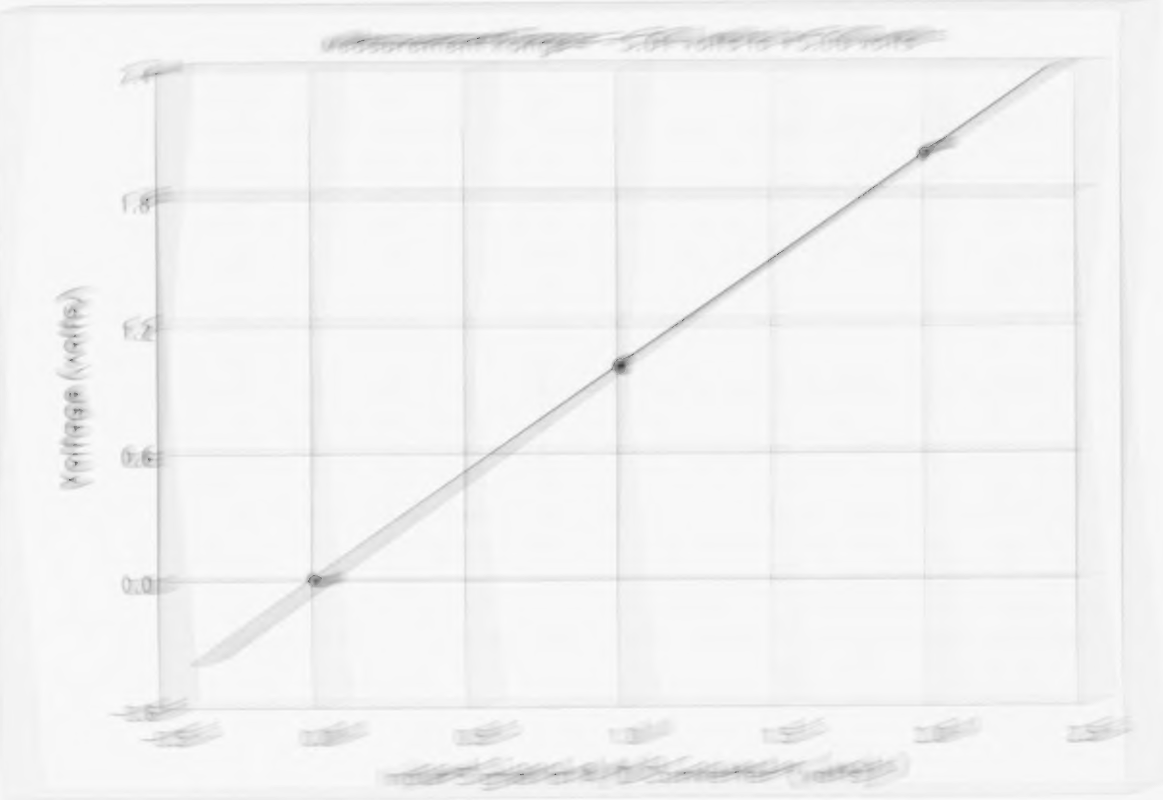
$V = C_0 + C_1$ [illegible]

where V(t) = Voltage (volts)

[illegible] = input signal at A/D converter (volts)

C_0 = [illegible] volts

C_1 = [illegible] constant



Appendix 6

TEMPSC Wire Telemetry

TEMPSC WIRELESS TELEMETRY

The core of the radio telemetry signal conditioner system is comprised of three units:

1. **Signal conditioner PCB.**
2. **Digital / radio PCB.**
3. **Power PCB.**

The signal conditioner PCB:

This consists of eight filtered channels. The component values and cut off frequency were calculated using the "Filter Lab" program. For this test the cut off frequency was 50Hz .The circuit topology is sallen-key, fifth order, butter worth. Channels 5 to 8 had an additional instrumentation amplifier.

This signal conditioner PCB also has a water sense circuit. This particular design consisted of three mosfets, an AND gate, LED and the davit release servo. When water is present across the "Water Pins" and because chlorinated water has a relatively low resistance of around 100k to 200k, the voltage at the Gate of each mosfet rises and the device turns "ON". When the system is activated, a green LED on the canopy is also illumined. The operator sees this and then moves the servo controller to release the davit lines.

The location of these water pins is set at a distance to simulate the "real" hydrostatic switch level.

There was also a short time delay added to this circuit that extended its "on" time when water was detected.

Another feature available was the water "Bypass" circuit. This allows the servo to release the davit lines without water being present at the pins. A toggle switch is used to select which mode is required. When in bypass mode an electrical signal on the davit lines is used to enable the release system.

This signal conditioner board also has an optical receiver circuit which was used to monitor when the davit release system physically moved to the open position.

The digital / radio PCB:

This unit can be used to transmit or receive data. When configured to send data the board uses a Maxim 12-bit, 8-channel, single-ended analog to digital converter. This unit is low power and has an internal track/hold system with a 133kHz-sampling rate. This A/D interacts with a Microchip PIC using serial communication. The 8 channels are stored in the PIC's buffer and then transmitted to the shore unit, this process repeats itself at approximately 500 Hz for 8 channels.

The digital data is comprised of three segments during transmissions. The range of this system is presently at 100 meters with minimum data loss. During lifeboat testing the range was less, around 10 meters. Radio screening and antenna setup using the newly acquired spectrum analyzer dramatically improved the radio range.

When configured to receive data the board uses two, four channel, 12-bit digital to analog converters. These units are wired also to a Microchip PIC and use serial communication. The digital radio signal is stored and validated in this receive PIC before any update to the eight output channels occurs. If any of the three parts of the data is not valid then the entire segment is discarded. Only valid data updates are processed. If a data unit is discarded, then a signal level will indicate this event. In this unit, channel nine was the “signal loss” monitor. This channel was also a good indicator when setting up the system for optimal reception.

The power PCB:

This is the third unit in the system. It handles the voltage regulation, motor speed control and also controls the battery charging for the model. The charging is accomplished when the lifeboat model is suspended from the davit lines in it's start or rest position. A voltage is then applied to these lines. The power PCB senses this voltage and shuts down all the electronics on the model, then the voltage on the davit lines is used to charge the battery. This charging technique was balanced with power usage and thus allowed for continuous testing. The power PCB can also be modified to sense a voltage of opposite polarity on the davit lines. This voltage can then be used as the trigger for the water bypass circuit as discussed above.

The individual regulators on this PCB have a “Flag” output when the supply voltage from the battery gets low. This signal is sent to the canopy and illuminates a red LED for the operator to see. This was used to ensure the motor speed controller maintained its required voltage during testing.

ADDITIONAL FEATURES:

Miniature colour camera

A 2.4 Ghz miniature colour camera was added to the model and was placed to capture the same view a coxswain would see when in the full-scale lifeboat. This camera signal was received on shore and amplified before being both recorded and viewed for operational control of the model. The range of this unit is 1000 feet line of sight and will run at 6 volts with a current draw of 30 mA. The picture has a resolution 350 lines, 2 lux and an f2.0 /4.0 mm wide-angle lens.

Rudder angle

The rudder angle was recorded by signal receiver duplication. A second servo attached to an RVDT on shore responded to the same signal being sent to the model. This RVDT signal was calibrated within 1 degree of the model's rudder angle. The davit release signal was also captured in this unit. This was an indicator of when the operator sent the release signal to the model. Both this operator signal and the presence of water at the detect pins are required for the model to be released from the davit lines.

Motor

The motor used was a 15.5-watt Faulhaber model with integrated drive electronics. The motor had a starting torque of 4.67 oz-in, a speed range of 500 to 6500 rpm and a no load idle current of 60 mA. With a weight of 5.54 oz, this unit proved to be a very stable drive system for the duration of the tests.

Futaba 8 channel

The Futaba 8 channel digital proportional RF controller and receiver were used for motor on/off, rudder control and davit release. The model had two servos, a relay and the Futaba receiver. The controller also has digital trim for any mechanical adjustment and initial rudder offset.

Battery

The battery was a rapid recharge lead acid Panasonic unit, 12 volts with a 2.3 Amp-hr rating.

Six-component motion pack

The six-component motion pack was made up of three accelerometers and three rate gyros.

The accelerometers were from Analog Devices. The range was +/- 5 g's, the output was centered at 2.5 volts at 0 g. These accelerometers were placed on a one-inch square PCB. This PCB was designed to provide 5-pole filter signal conditioning and offset control.

The rate gyros were from Tokin and had a +/- 90 deg frequency response. These units required a 5-volt supply and use 7mA of current. The output was centered at 2.4 volts and the sensitivity was 1.1 mV/deg/sec (+/- 20%).

Radios

The radios were from Radiometrix. They were the TX/RX 2 units capable of up to 160 kbit/s. At the recommended 5-volt supply the transmitter unit draws 14 mA of current and outputs an average 9 dBm radiated power. The receiver draws 13 mA of current at 6-volts and the 160 kbit/s receiver unit has a -96 dBm sensitivity @ 1ppm BER.

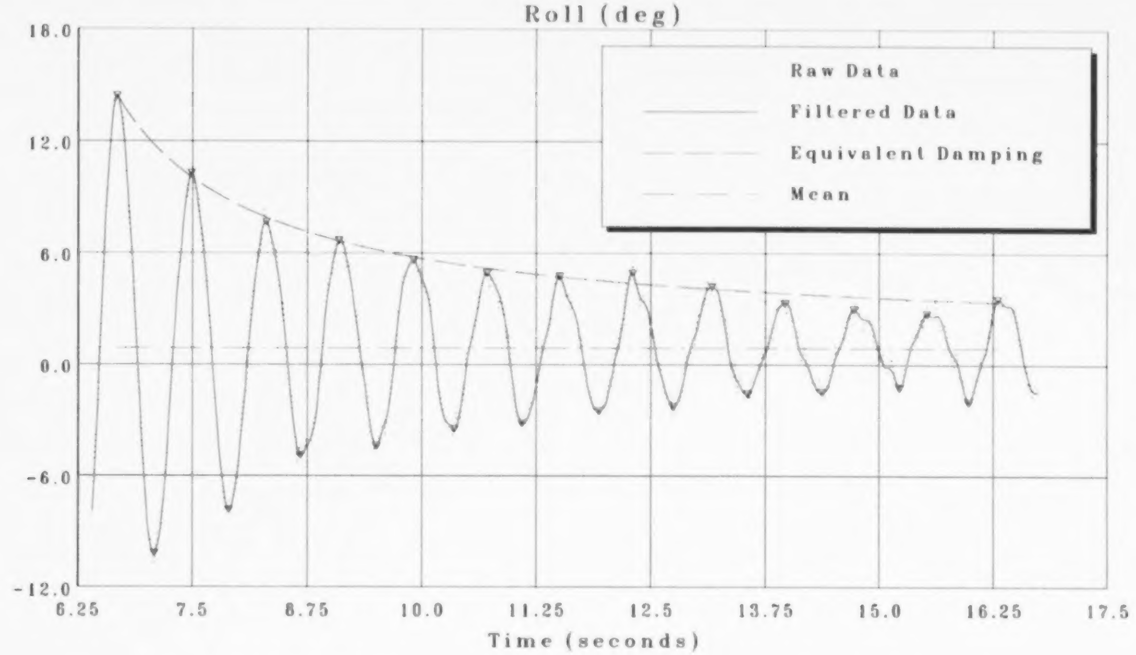
Appendix 7

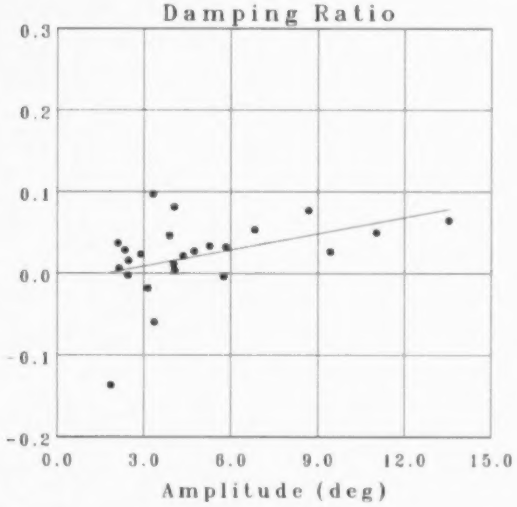
Decay Test Data

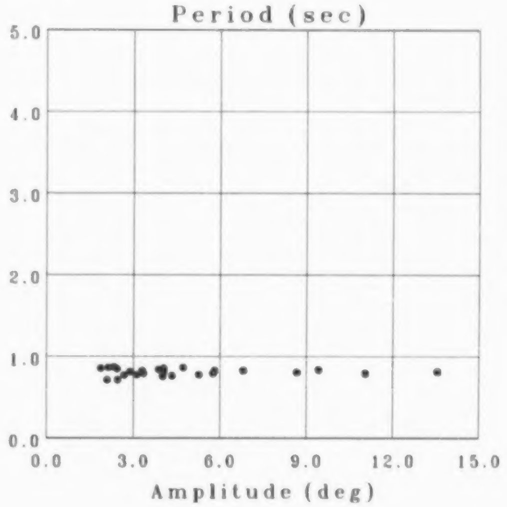
A. Simoes Re

Evacuation Systems
}PROJECT_PHASE{

Analyzed: 12-NOV-2003 11:43:53
Acquired: 12-JAN-2002 12:21:05


Roll (deg)


Damping Ratio


Period (sec)

MEAN	DAMPING
Offset = 0.8593 deg	Linear = 0.02150
Period = 0.8061 sec	Equivalent B1 = -0.01066
	Equivalent B2 = 0.006567

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Roll
decays_m13_001

Roll (deg)

Offset	Average Period	Linear Damping Coefficient	Equivalent Damping Slope	Equivalent Damping Offset
0.8593	0.8061	0.02150	0.00657	-0.01066

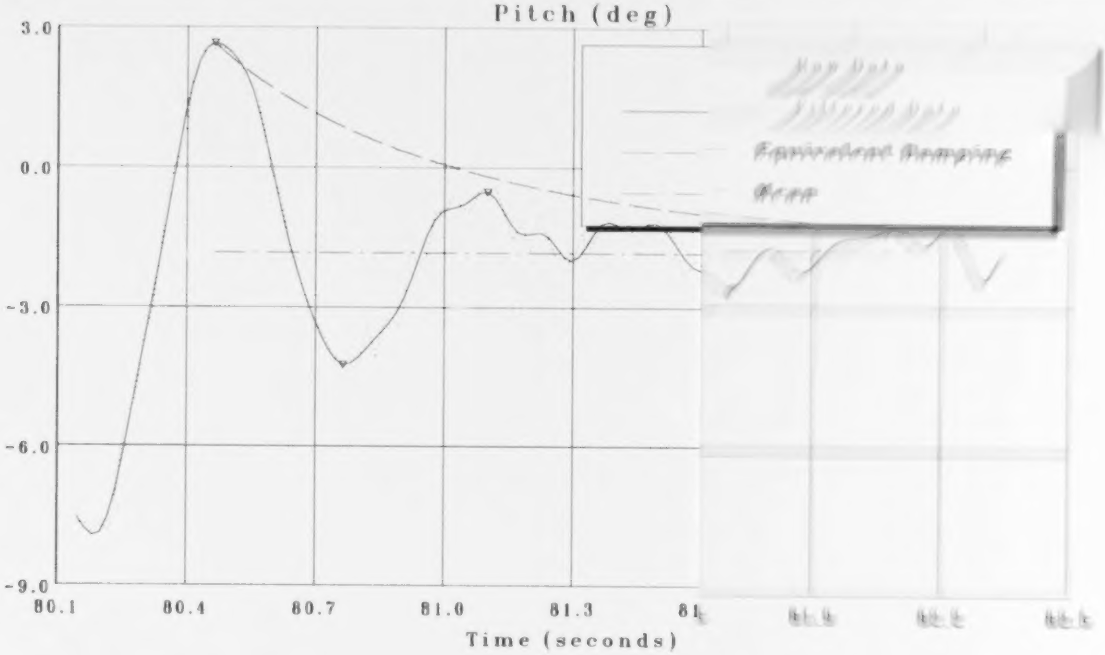
Roll (deg)

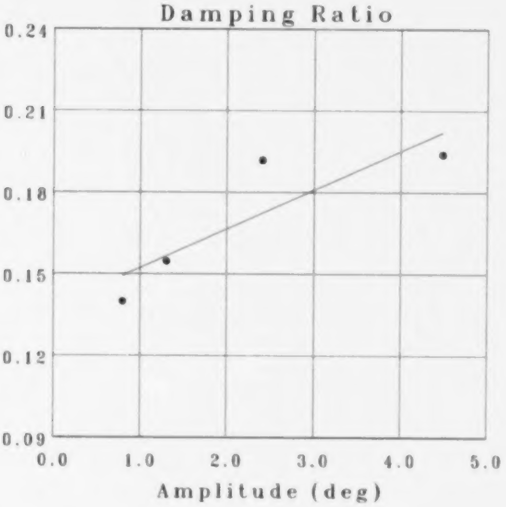
Amplitude	ABS(Amplitude-Offset)	Damping Ratio	Period
14.4096	13.5504	0.06498	0.8126
-10.1842	11.0435	0.05005	0.7905
10.2940	9.4347	0.02637	0.8354
-7.8252	8.6845	0.07697	0.8015
7.6735	6.8143	0.05365	0.8256
-4.8966	5.7558	-0.00406	0.7860
6.6890	5.8297	0.03224	0.8220
-4.4086	5.2678	0.03379	0.7748
5.5962	4.7369	0.02690	0.8579
-3.4936	4.3529	0.02132	0.7623
4.9300	4.0708	0.00319	0.8541
-3.1709	4.0301	0.01145	0.7533
4.7470	3.8877	0.04638	0.8386
-2.5008	3.3600	-0.05967	0.7913
4.9134	4.0542	0.08149	0.8122
-2.2765	3.1358	-0.01815	0.7751
4.1791	3.3198	0.09750	0.8214
-1.5810	2.4403	-0.00239	0.8491
3.3180	2.4587	0.01571	0.7071
-1.4811	2.3403	0.02823	0.8710
3.0009	2.1416	0.00659	0.8642
-1.2385	2.0977	0.03699	0.7096
2.7267	1.8674	-0.13714	0.8549
-2.0256	2.8849	0.02370	0.8116
3.5371	2.6778		0.7706

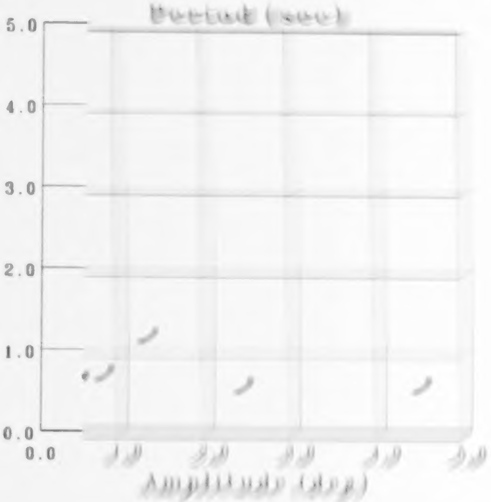
A. Simoes Re

Evacuation Systems
}PROJECT_PHASE{

Analyzed: 12-NOV-2003 11:49:24
Acquired: 12-JAN-2002 12:21:05







MEAN	DAMPING
Offset = -1.825 deg	L[illegible] = [illegible]
Period = 0.7654 sec	Equivale[illegible] = [illegible]
	Equivale[illegible] = [illegible]

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Pitch
[illegible]

Pitch (deg)

Offset	Average Period	Linear Damping Coefficient	Equivalent Damping Slope	Equivalent Damping Offset
-1.8253	0.7651	0.17008	0.01135	0.13780

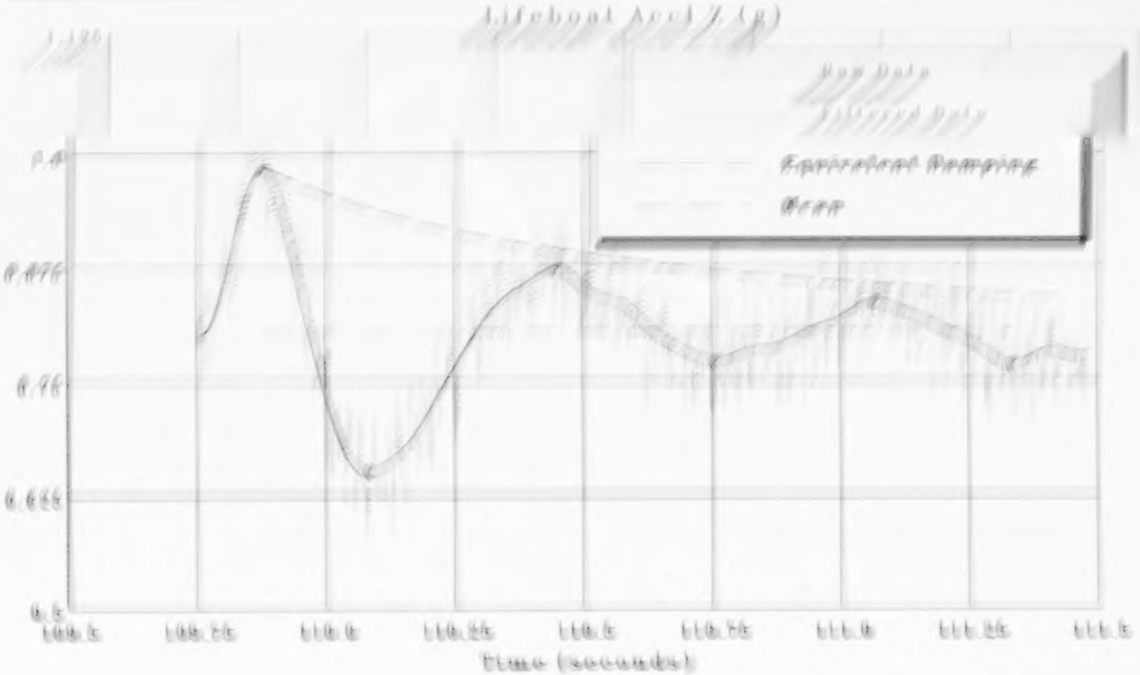
Pitch (deg)

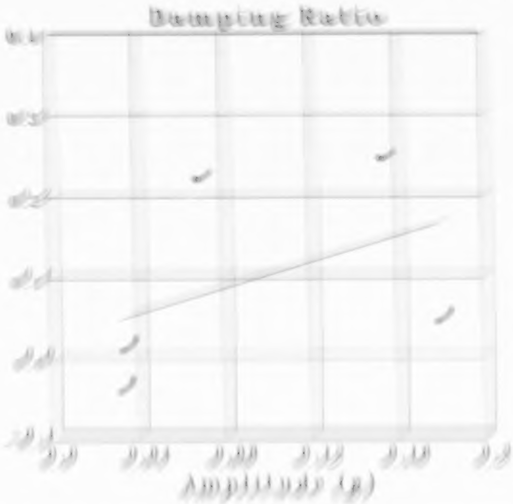
Amplitude	ABS(Amplitude-Offset)	Damping Ratio	Period
2.6608	4.4860	0.19894	0.6128
-4.2359	2.4106	0.19178	0.5920
-0.5206	1.3047	0.15472	1.2129
-2.6230	0.7977	0.13989	0.7411
-1.3135	0.5118		0.6611

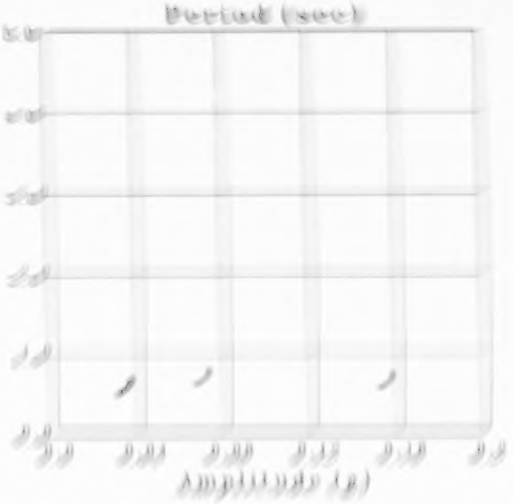
A. Simoes Re

Evacuation Systems
[PROJECT PHASE]

Analyzed: 12-NOV-2003 11:51:19
Acquired: 12-JAN-2002 12:21:05







MEAN

Offset = [illegible] g
Period = [illegible] sec

DAMPING

Linear = [illegible]
Equivalent D1 = [illegible]
Equivalent D2 = [illegible]

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Lifeboat Accel Z
[illegible]

Lifeboat Accel Z (g)

Offset	Average Period	Linear Damping Coefficient	Equivalent Damping Slope	Equivalent Damping Offset
0.8040	0.6188	0.09883	0.79727	0.02110

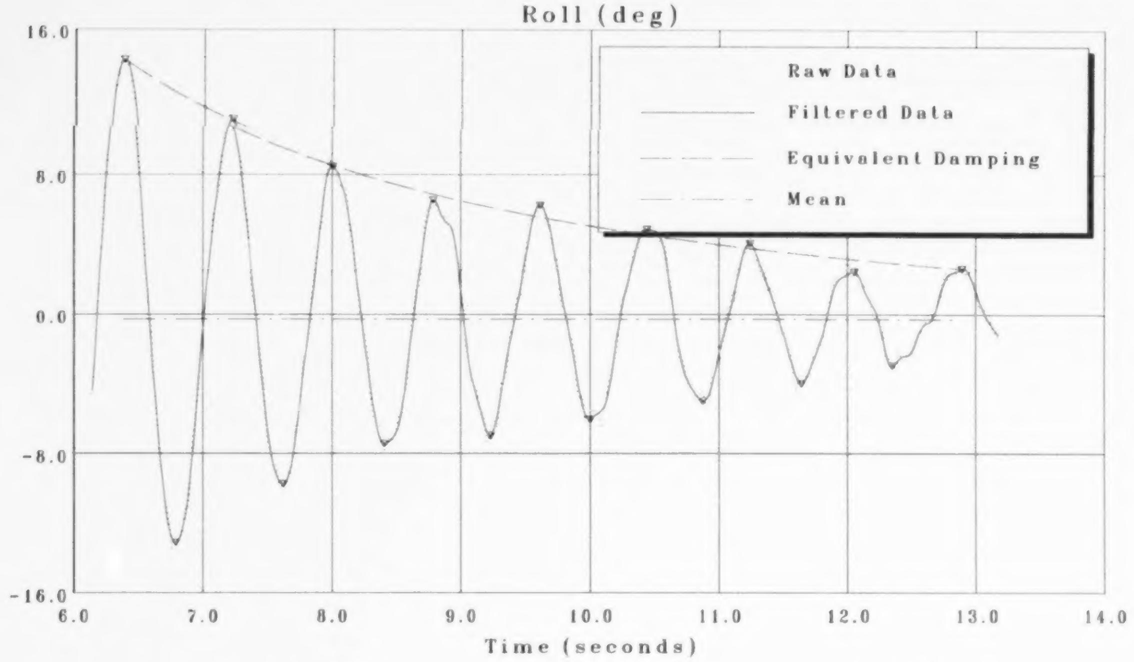
Lifeboat Accel Z (g)

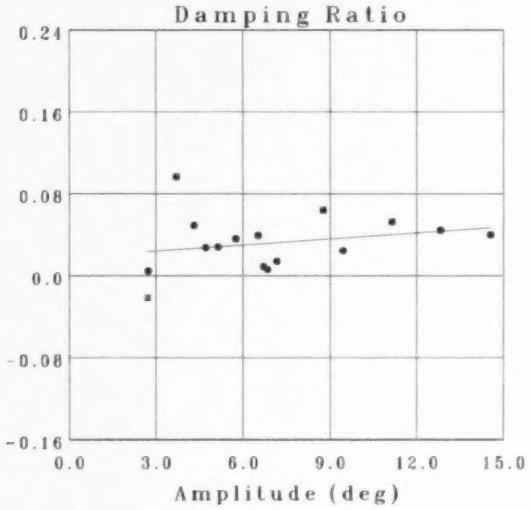
Amplitude	ABS(Amplitude-Offset)	Damping Ratio	Period
0.3239	0.4799	0.04834	
0.6499	0.1549	0.24759	0.6497
0.8731	0.0690	0.22291	0.5879
0.7703	0.0337	0.01317	0.5951
0.8363	0.0323	0.03773	0.5599
0.7677	0.0363		

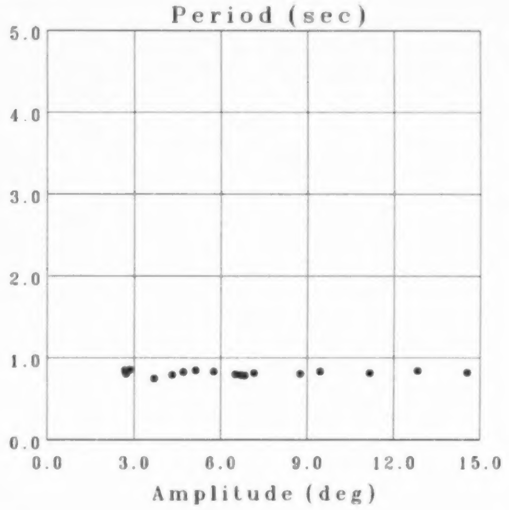
A. Simoes Re

Evacuation Systems
}PROJECT_PHASE{

Analyzed: 12-NOV-2003 15:12:19
Acquired: 15-JAN-2002 17:59:45


Roll (deg)


Damping Ratio


Period (sec)

MEAN

Offset = -0.2711 deg
Period = 0.8129 sec

DAMPING

Linear = 0.03224
Equivalent B1 = 0.01829
Equivalent B2 = 0.001975

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Roll
decays_m13_002

Roll (deg)

Offset	Average Period	Linear Damping Coefficient	Equivalent Damping Slope	Equivalent Damping Offset
-0.2711	0.8129	0.03224	0.00197	0.01829

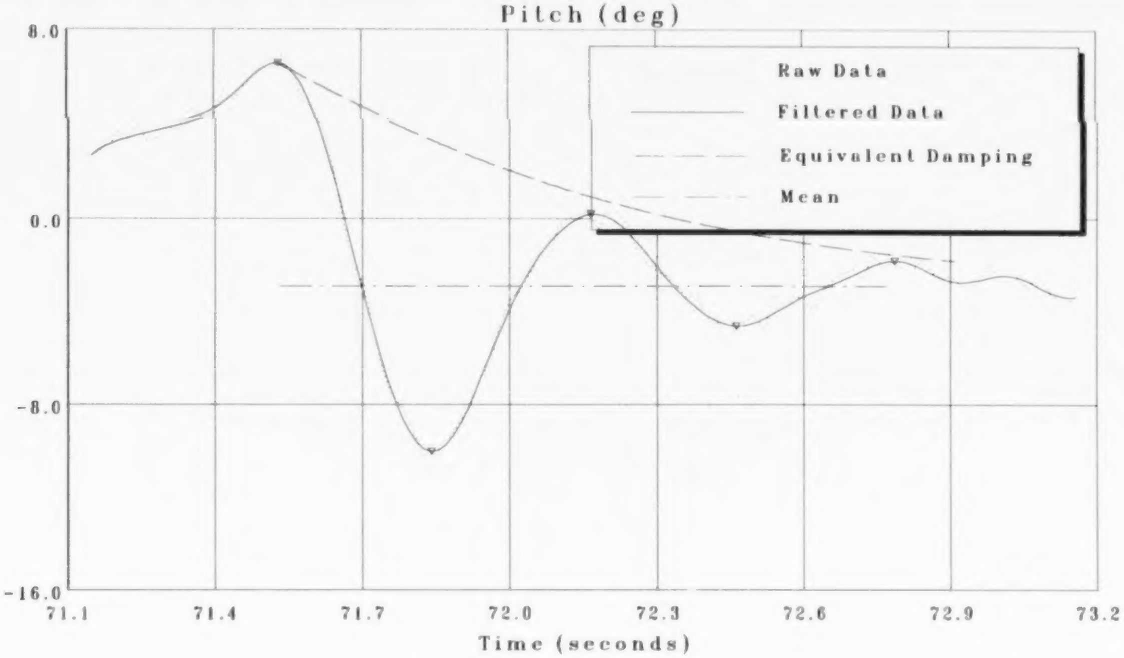
Roll (deg)

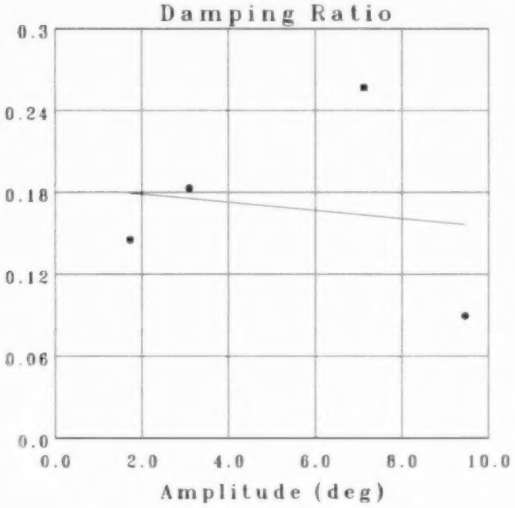
Amplitude	ABS(Amplitude-Offset)	Damping Ratio	Period
14.2883	14.5594	0.04019	0.8176
-13.1022	12.8311	0.04429	0.8417
10.8917	11.1628	0.05266	0.8112
-9.7295	9.4585	0.02451	0.8307
8.4861	8.7572	0.06407	0.8030
-7.4286	7.1575	0.01442	0.8073
6.5693	6.8404	0.00643	0.7797
-6.9747	6.7036	0.00911	0.7883
6.2435	6.5145	0.03944	0.7963
-6.0259	5.7549	0.03600	0.8295
4.8680	5.1390	0.02791	0.8450
-4.9786	4.7075	0.02757	0.8281
4.0457	4.3168	0.04901	0.7913
-3.9711	3.7000	0.09688	0.7462
2.4541	2.7252	0.00452	0.8013
-2.9579	2.6868	-0.02117	0.8453
2.6005	2.8716		0.8570

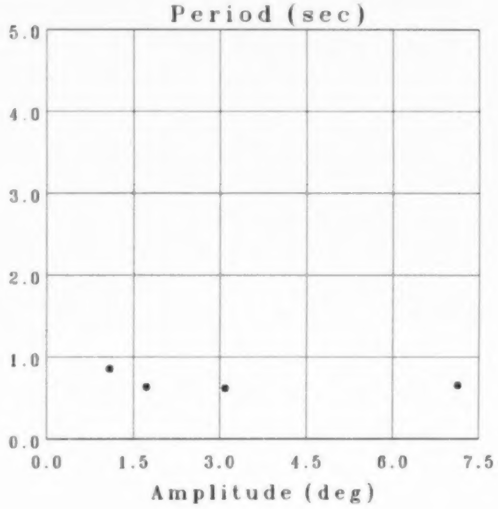
A. Simoes Re

Evacuation Systems
}PROJECT_PHASE{

Analyzed: 12-NOV-2003 15:14:53
Acquired: 15-JAN-2002 17:59:45







MEAN

Offset = -2.897 deg
Period = 0.6897 sec

DAMPING

Linear = 0.1687
Equivalent B1 = 0.1850
Equivalent B2 = -0.003037

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Pitch
decays_m13_002

A. Simoes Re

Evacuation Systems

Analyzed: 12-NOV-2003 15:14:53
Acquired: 15-JAN-2002 17:59:45

Pitch (deg)

Offset	Average Period	Linear Damping Coefficient	Equivalent Damping Slope	Equivalent Damping Offset
-2.8970	0.6897	0.16871	-0.00304	0.18497

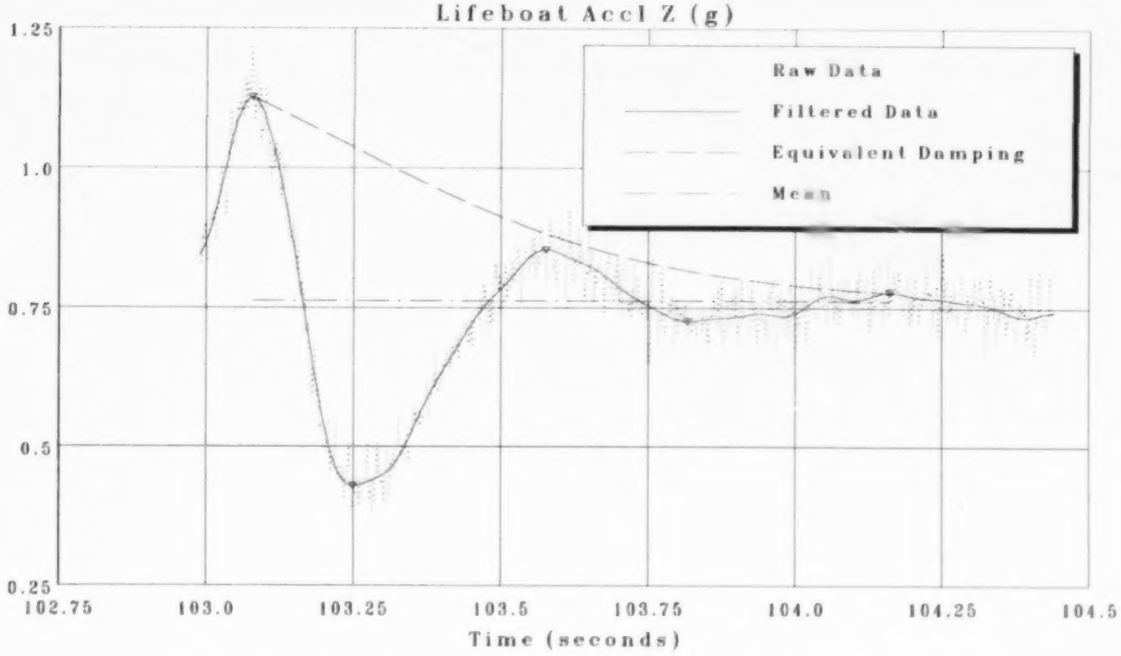
Pitch (deg)

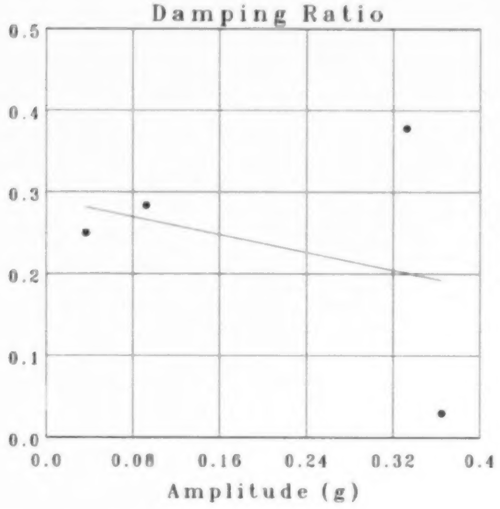
Amplitude	ABS(Amplitude-Offset)	Damping Ratio	Period
6.5620	9.4590	0.08962	
-10.0267	7.1297	0.25670	0.6498
0.1982	3.0952	0.18315	0.6204
-4.6209	1.7239	0.14537	0.6325
-1.8105	1.0865		0.8561

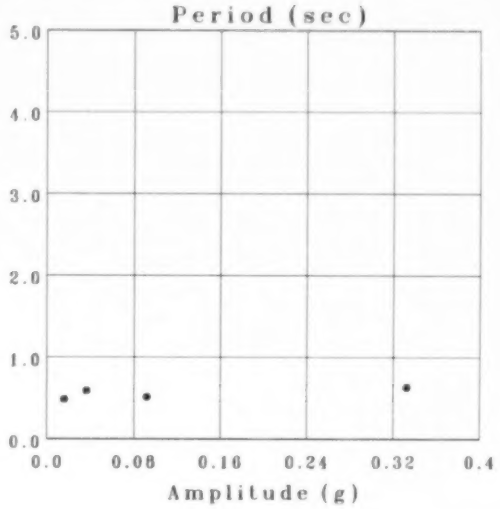
A. Simoes Re

Evacuation Systems
{PROJECT_PHASE}

Analyzed: 12-NOV-2003 15:19:01
Acquired: 15-JAN-2002 17:59:45







MEAN

Offset = 0.7621 g
Period = 0.5544 sec

DAMPING

Linear = 0.2352
Equivalent B1 = 0.2913
Equivalent B2 = -0.2715

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Lifeboat Accl Z
decays_m13_002

Lifeboat Accl Z (g)

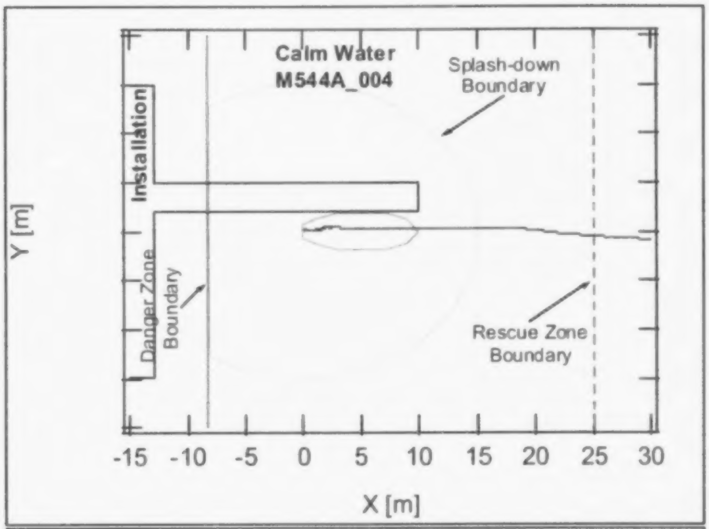
Offset	Average Period	Linear Damping Coefficient	Equivalent Damping Slope	Equivalent Damping Offset
0.7621	0.5544	0.23521	-0.27150	0.29129

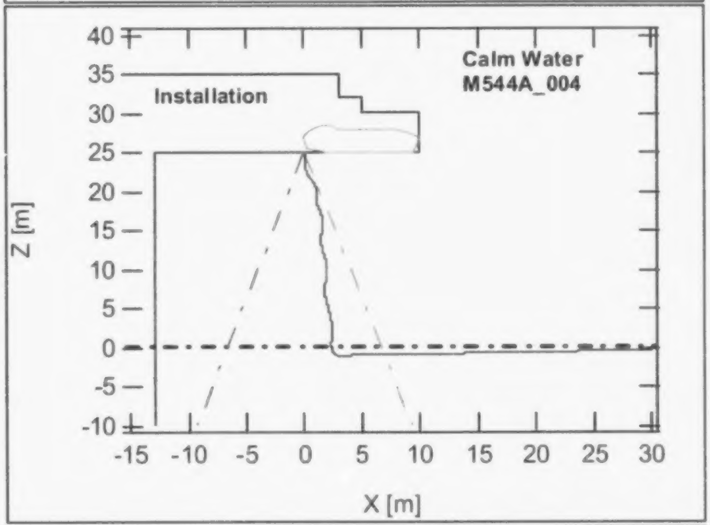
Lifeboat Accl Z (g)

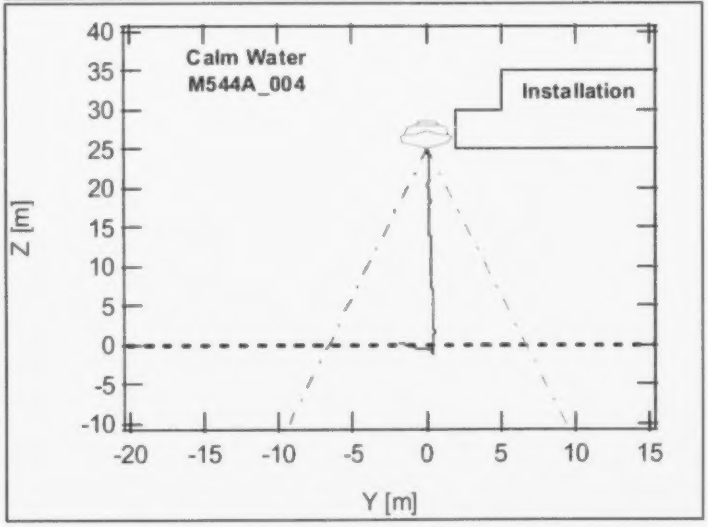
Amplitude	ABS(Amplitude-Offset)	Damping Ratio	Period
1.1271	0.3650	0.02955	
0.4294	0.3326	0.37818	0.6326
0.8542	0.0922	0.28336	0.5122
0.7257	0.0364	0.24975	0.5903
0.7783	0.0162		0.4823

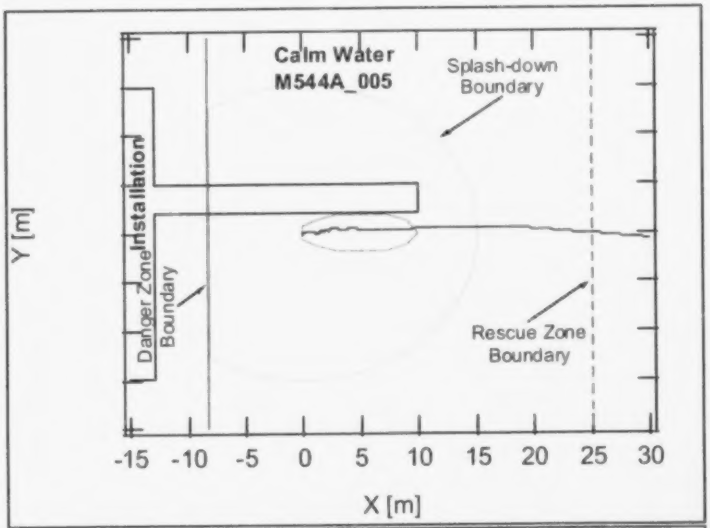
Appendix 8

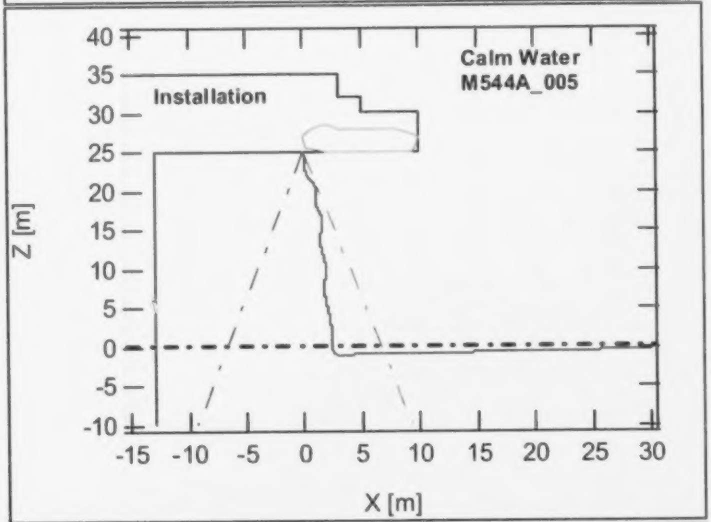
Series Plots


Calm Water
M544A_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15
-10
-5
0
5
10
15
20
25
30
X [m]


Calm Water
M544A_004
Installation
40
35
30
25
20
15
10
5
0
-5
-10
Z [m]
-15
-10
-5
0
5
10
15
20
25
30
X [m]


Calm Water
M544A_004
Installation
40
35
30
25
20
15
10
5
0
-5
-10
Z [m]
-20
-15
-10
-5
0
5
10
15
Y [m]


Calm Water
M544A_005
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15
-10
-5
0
5
10
15
20
25
30
X [m]


Calm Water
M544A_005
Installation
Z [m]
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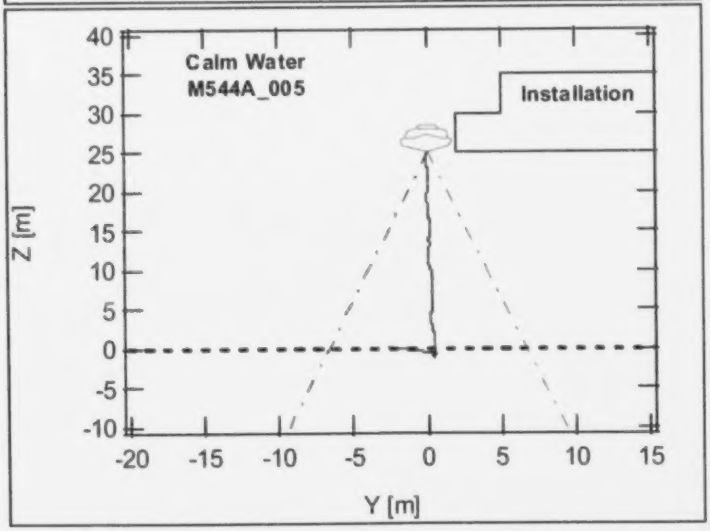
X [m]


Calm Water
M544A_005
Installation
Z [m]
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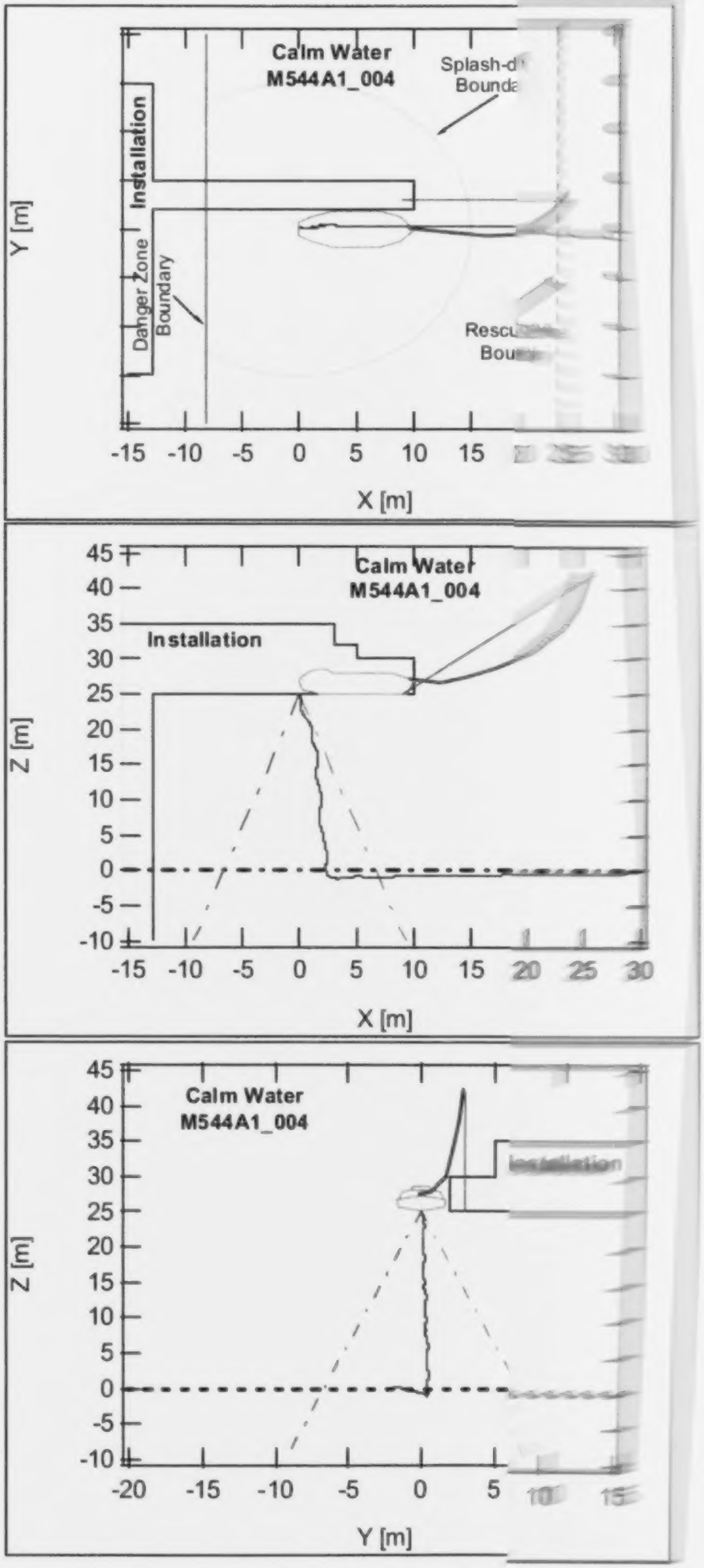
Y [m]


Calm Water
M544A1_004
Splash-d
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Installation
Danger Zone
Boundary
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Bou
Y [m]
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X [m]
Calm Water
M544A1_004
Installation
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Z [m]
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X [m]
Calm Water
M544A1_004
Installation
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Z [m]
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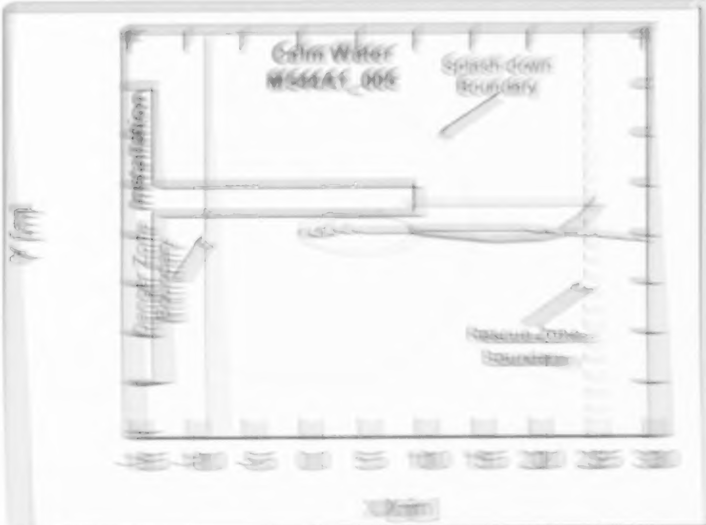
Y [m]


Calm Water
M544A1_005
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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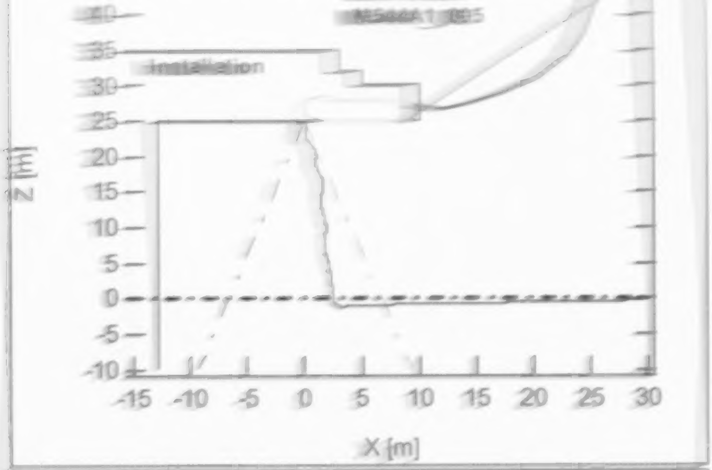
X [m]


Calm Water
M544A1_005
Installation
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Z [m]
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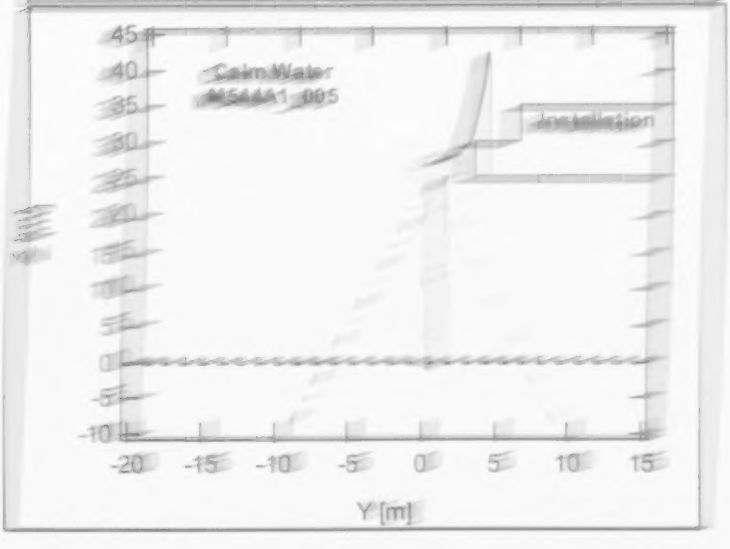
X [m]


Calm Water
M544A1_005
Installation
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Z [m]
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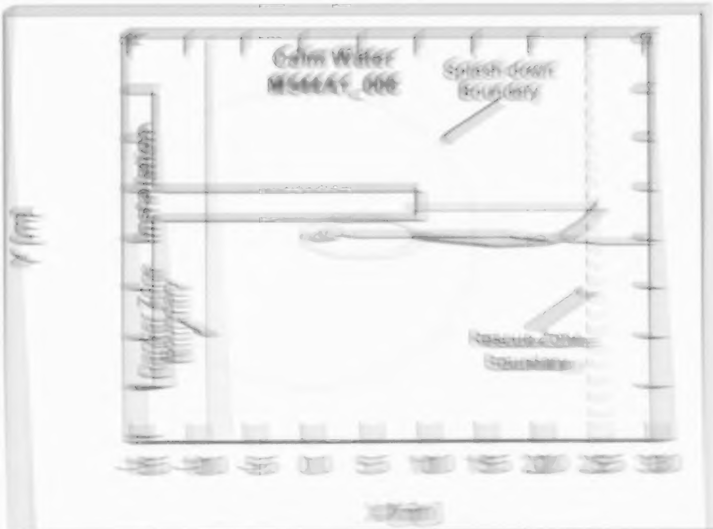
Y [m]


Calm Water
M544A1_006
Splash down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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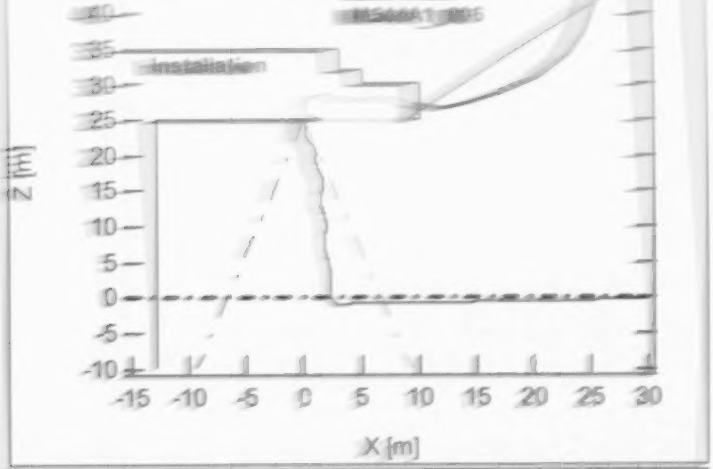
X [m]


Calm Water
M544A1_006
Installation
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Z [m]
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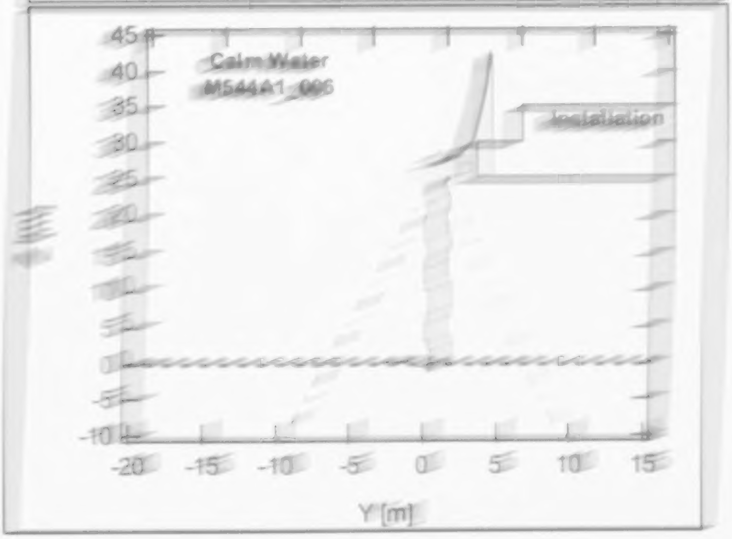
X [m]


Calm Water
M544A1_006
Installation
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Z [m]
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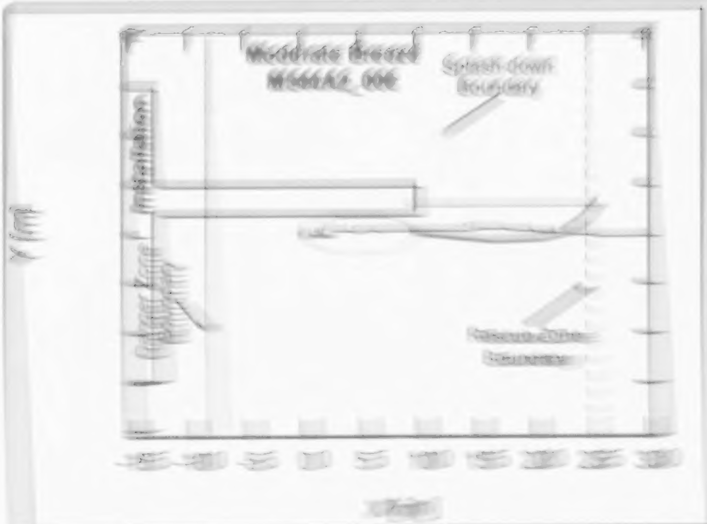
Y [m]


Moderate Breeze
M544A2_006
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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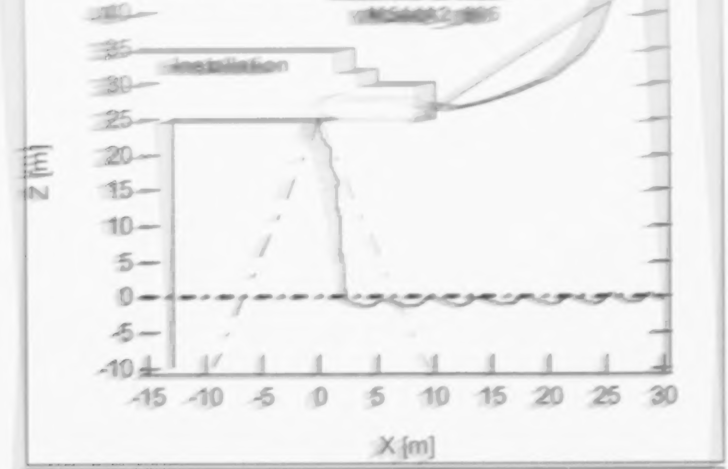
X [m]


Moderate Breeze
M544A2_006
Installation
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Z [m]
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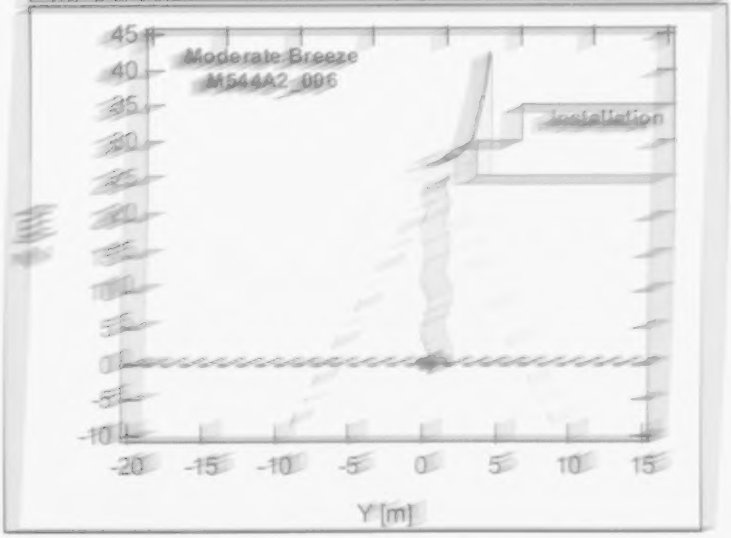
X [m]


Moderate Breeze
M544A2_006
Installation
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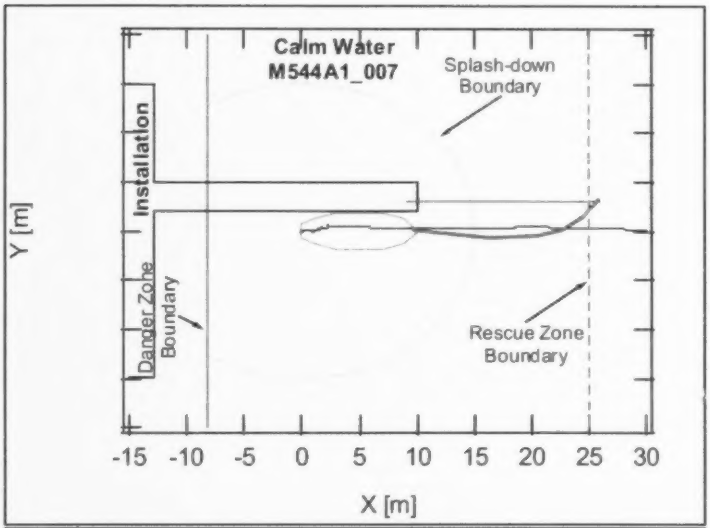
Y [m]


Calm Water
M544A1_007
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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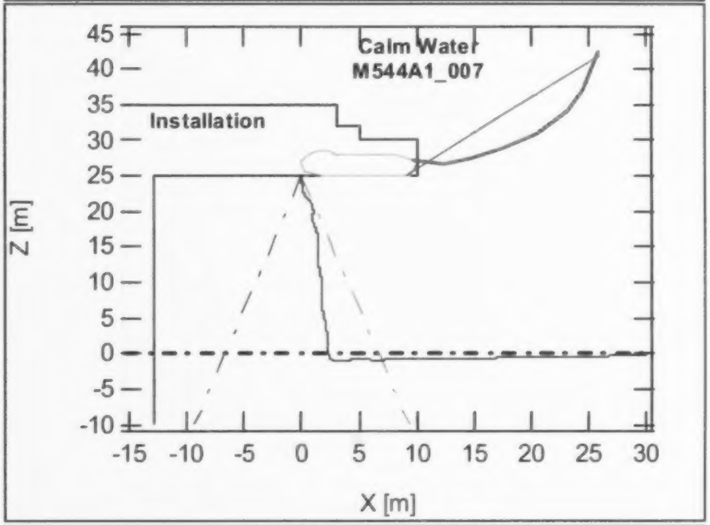
X [m]


Calm Water
M544A1_007
Installation
Z [m]
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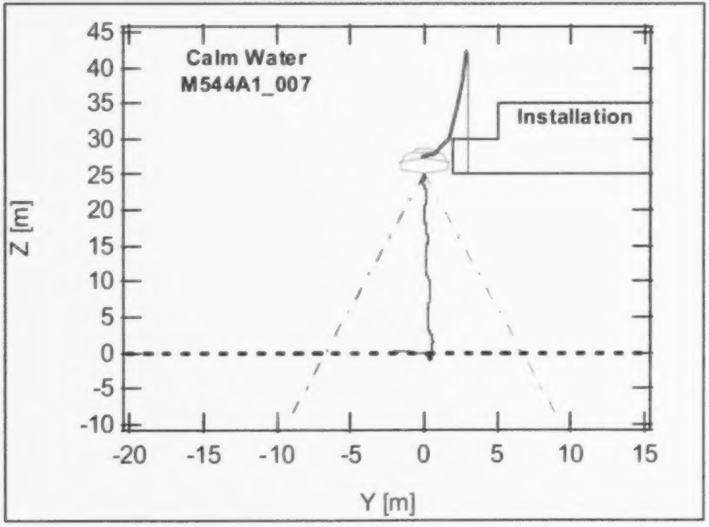
X [m]


Calm Water
M544A1_007
Installation
Z [m]
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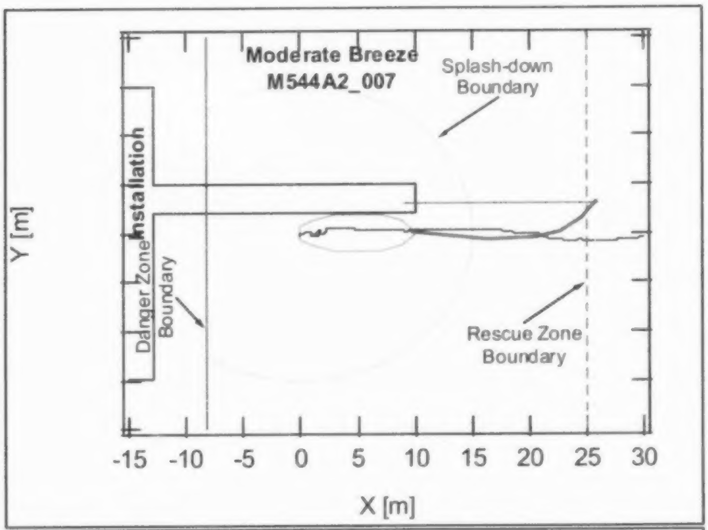
Y [m]


Moderate Breeze
M544A2_007
Splash-down Boundary
Installation
Danger Zone
Boundary
Rescue Zone Boundary
Y [m]
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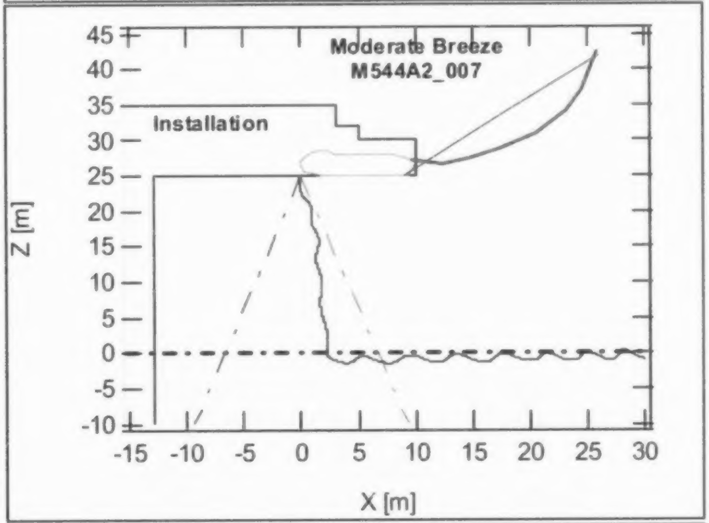
Moderate Breeze
M544A2_007
Installation
Z [m]
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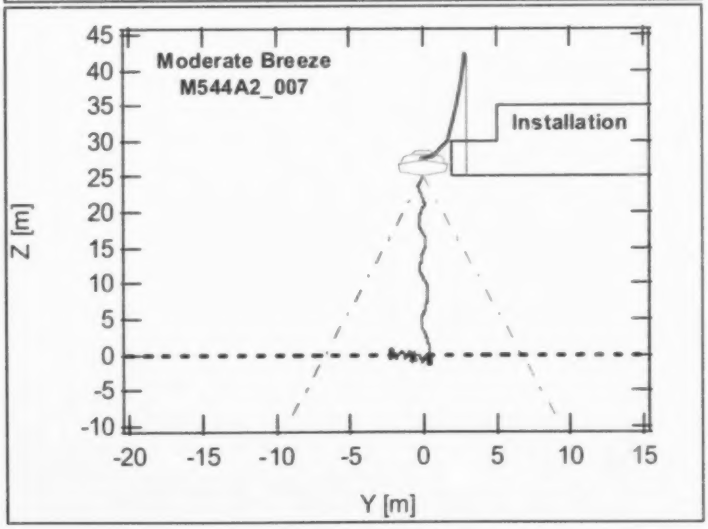
Moderate Breeze
M544A2_007
Installation
Z [m]
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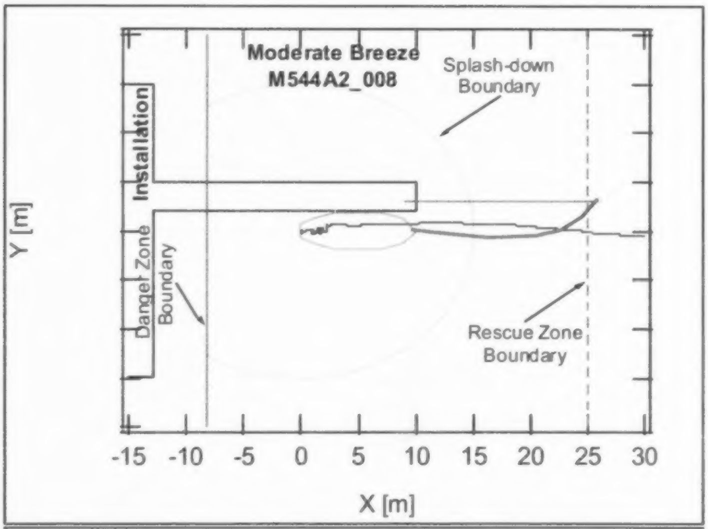
Y [m]


Moderate Breeze
M544A2_008
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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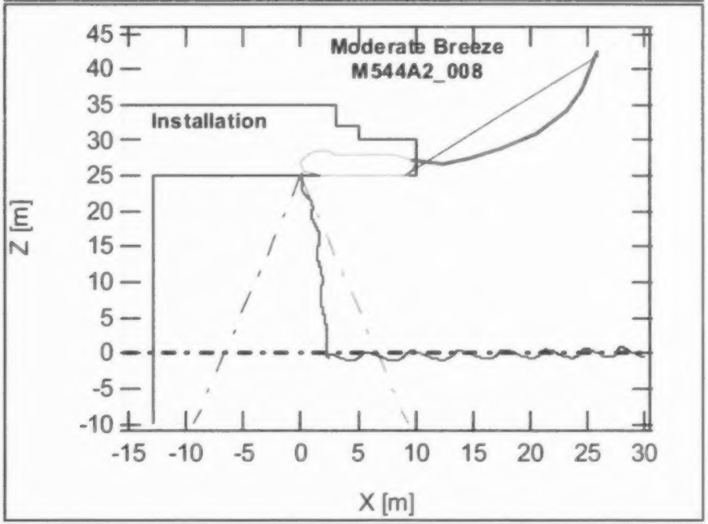
X [m]


Moderate Breeze
M544A2_008
Installation
Z [m]
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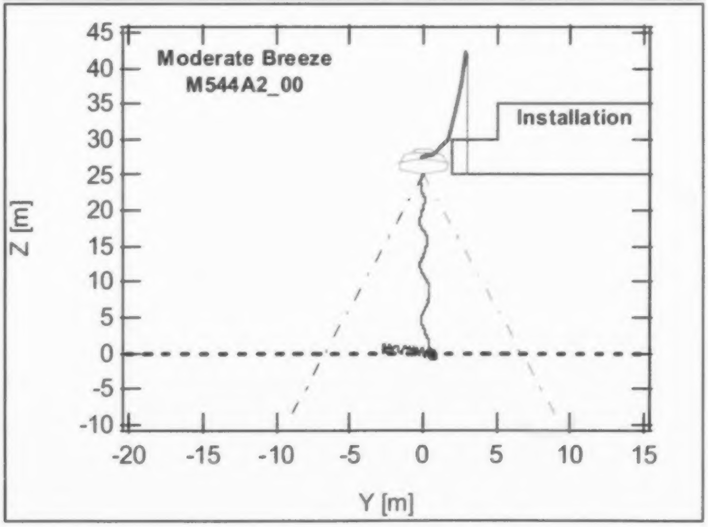
X [m]


Moderate Breeze
M544A2_00
Installation
Z [m]
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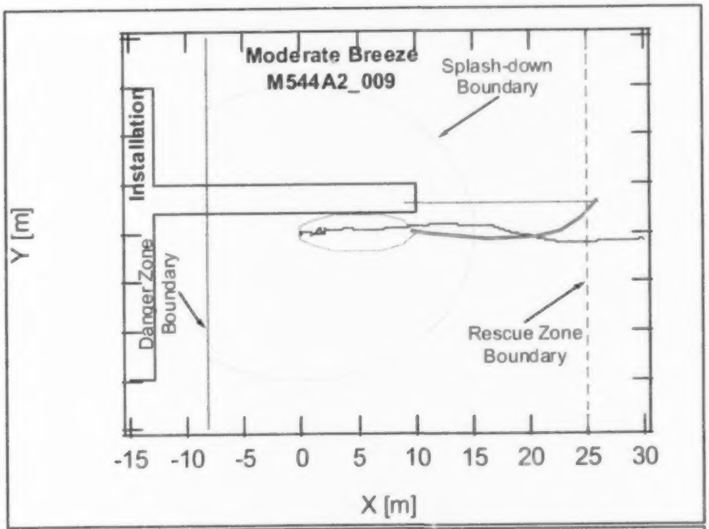
Y [m]


Moderate Breeze
M544A2_009
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
X [m]
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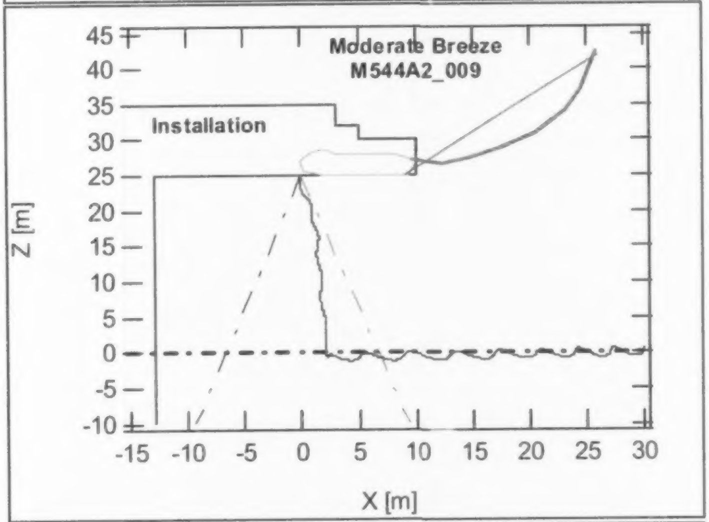
Moderate Breeze
M544A2_009
Installation
Z [m]
X [m]
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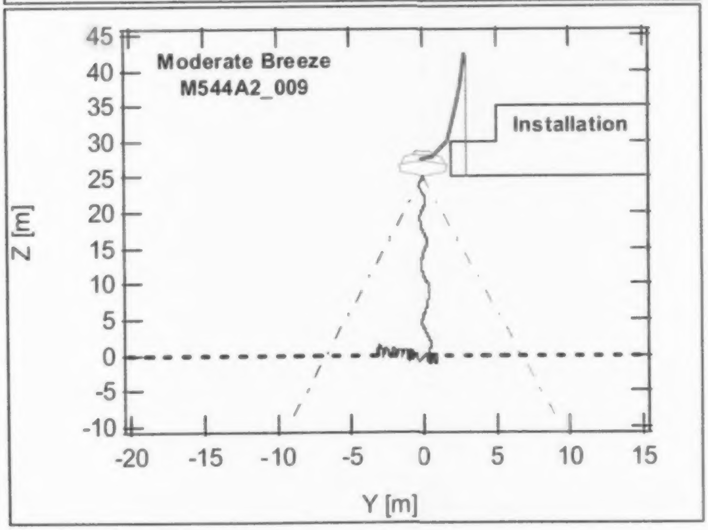
Moderate Breeze
M544A2_009
Installation
Z [m]
Y [m]
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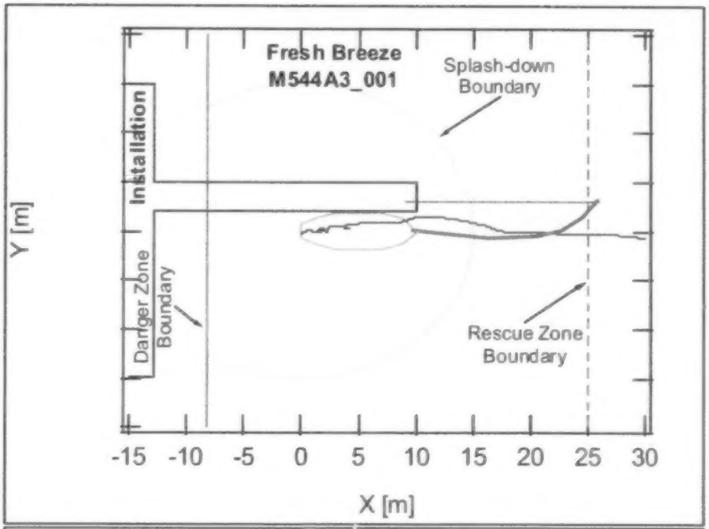
Fresh Breeze
M544A3_001
Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
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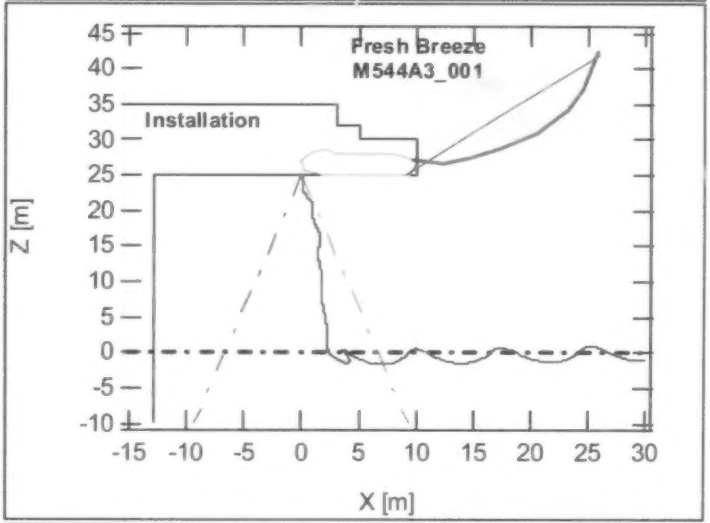
X [m]


Fresh Breeze
M544A3_001
Installation
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Z [m]
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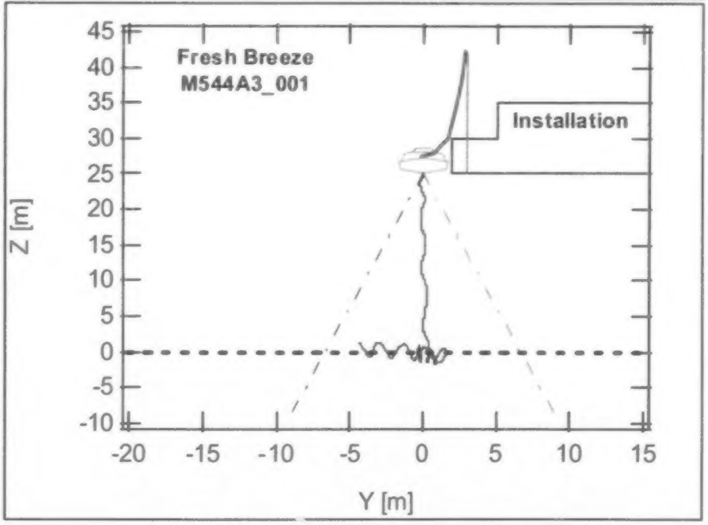
X [m]


Fresh Breeze
M544A3_001
Installation
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Z [m]
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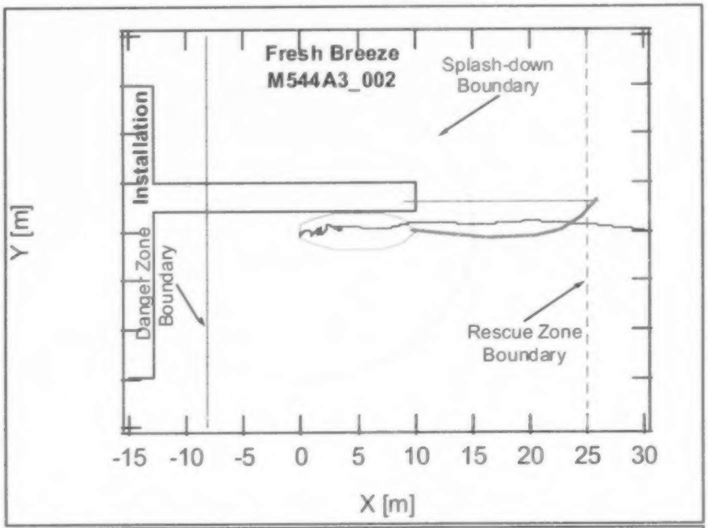
Y [m]


Fresh Breeze
M544A3_002
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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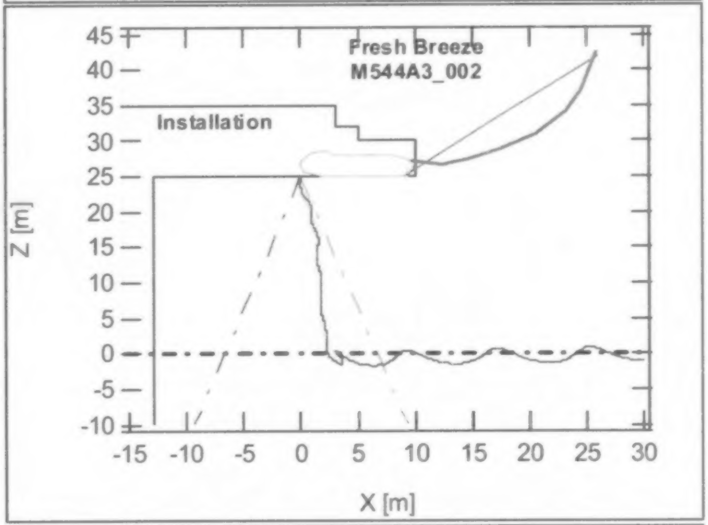
X [m]


Fresh Breeze
M544A3_002
Installation
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Z [m]
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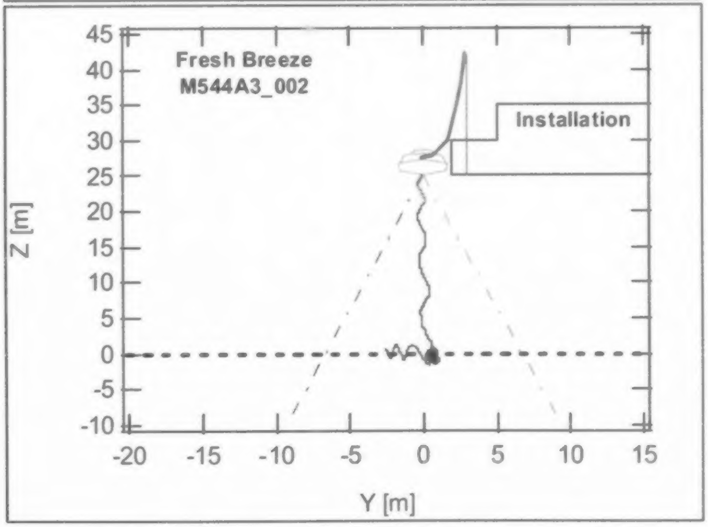
X [m]


Fresh Breeze
M544A3_002
Installation
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Z [m]
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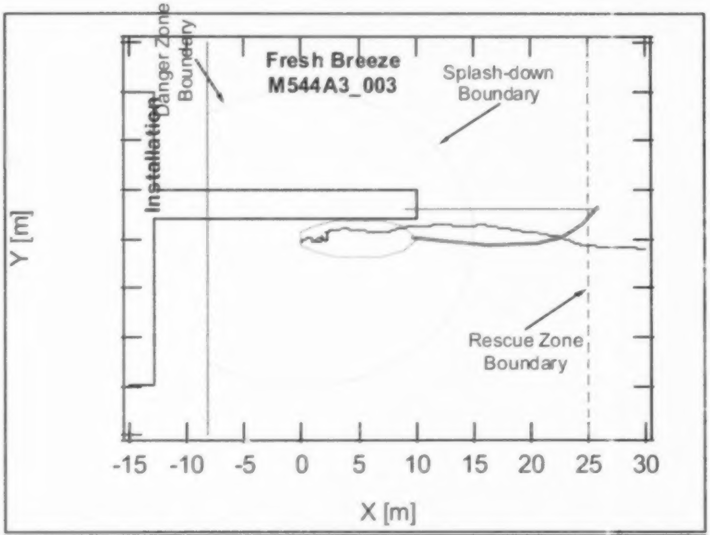
Y [m]


Fresh Breeze
M544A3_003
Installation
Danger Zone Boundary
Splash-down Boundary
Rescue Zone Boundary
Y [m]
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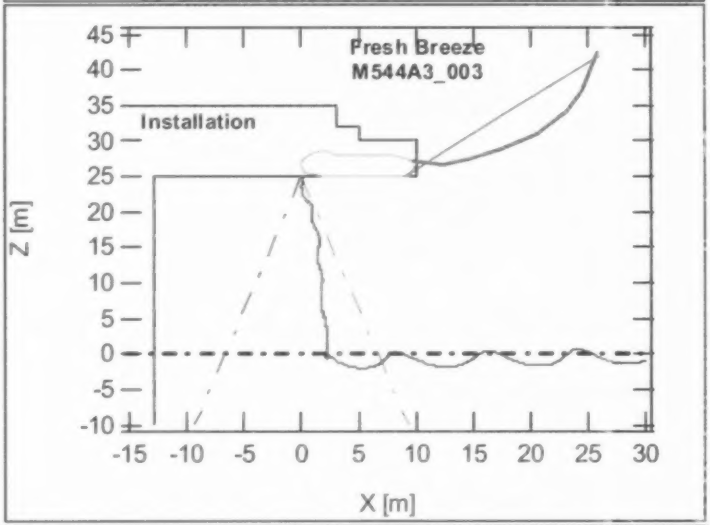
X [m]


Fresh Breeze
M544A3_003
Installation
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Z [m]
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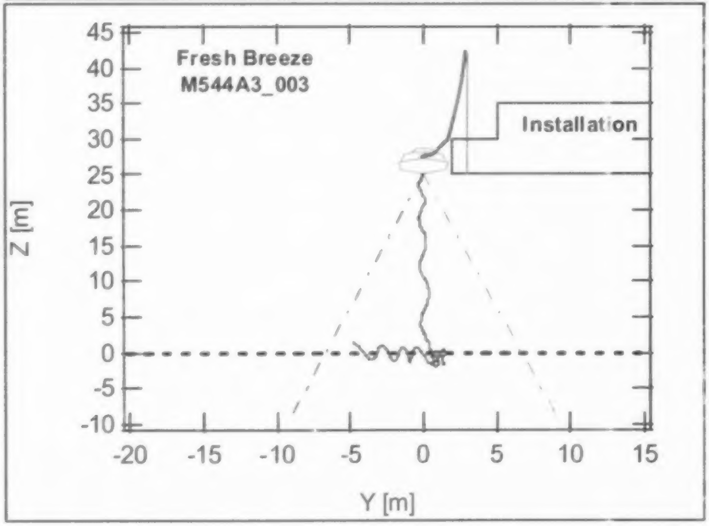
X [m]


Fresh Breeze
M544A3_003
Installation
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Z [m]
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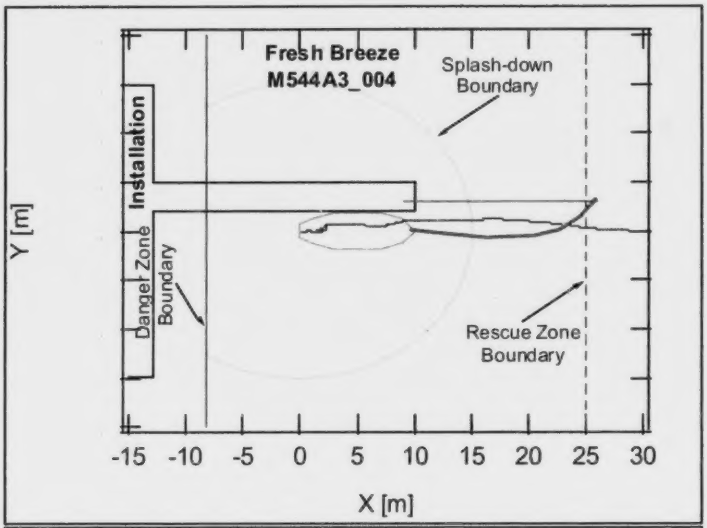
Y [m]


Fresh Breeze
M544A3_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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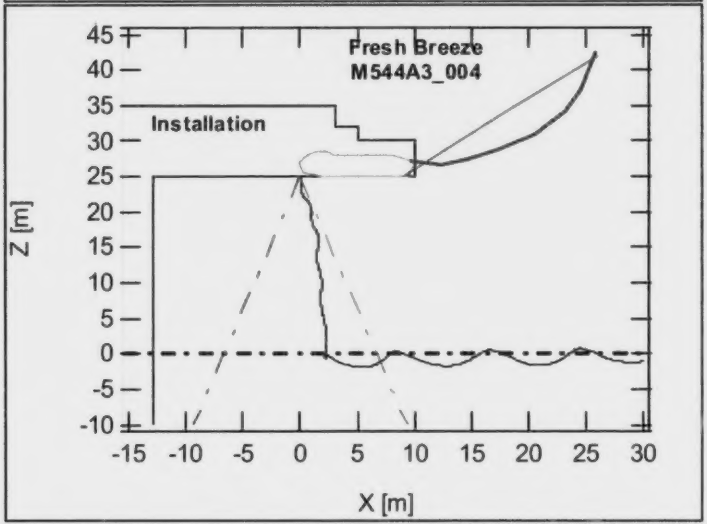
X [m]


Fresh Breeze
M544A3_004
Installation
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Z [m]
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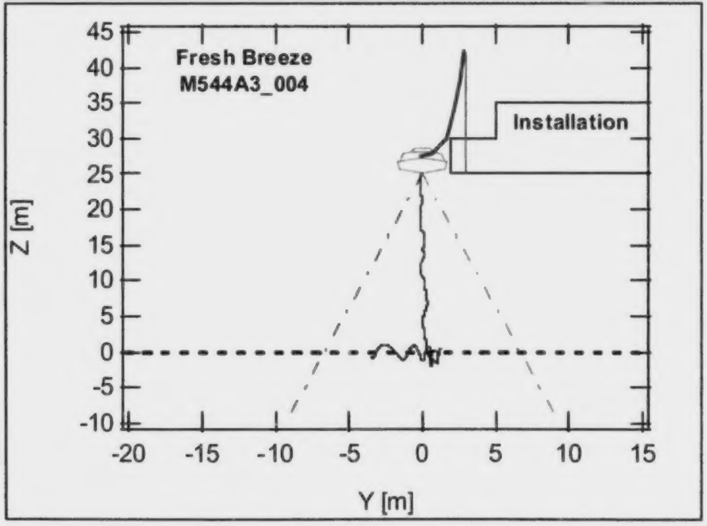
X [m]


Fresh Breeze
M544A3_004
Installation
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Z [m]
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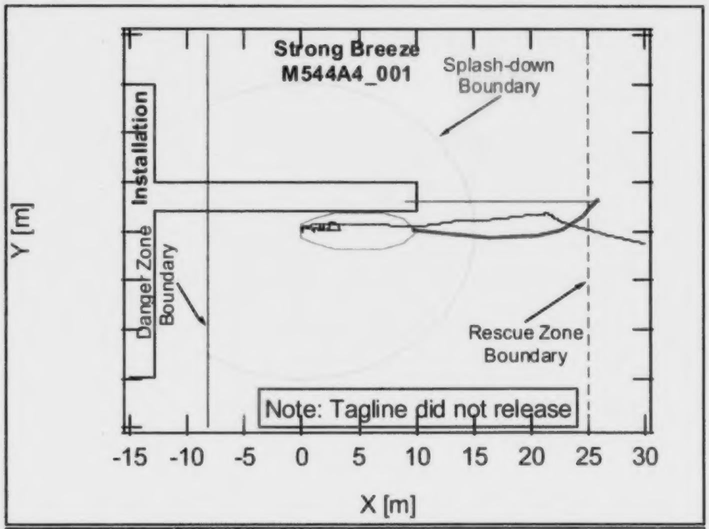
Y [m]


Strong Breeze
M544A4_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Note: Tagline did not release
Y [m]
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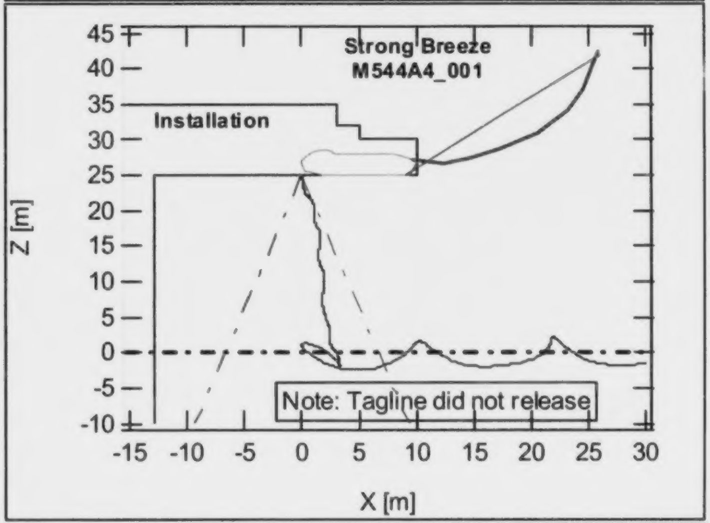
X [m]


Strong Breeze
M544A4_001
Installation
Note: Tagline did not release
Z [m]
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-5
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-10
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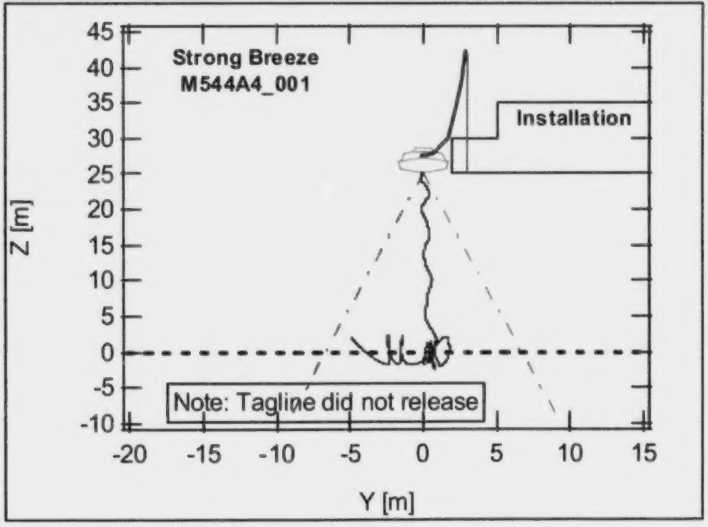
X [m]


Strong Breeze
M544A4_001
Installation
Note: Tagline did not release
Z [m]
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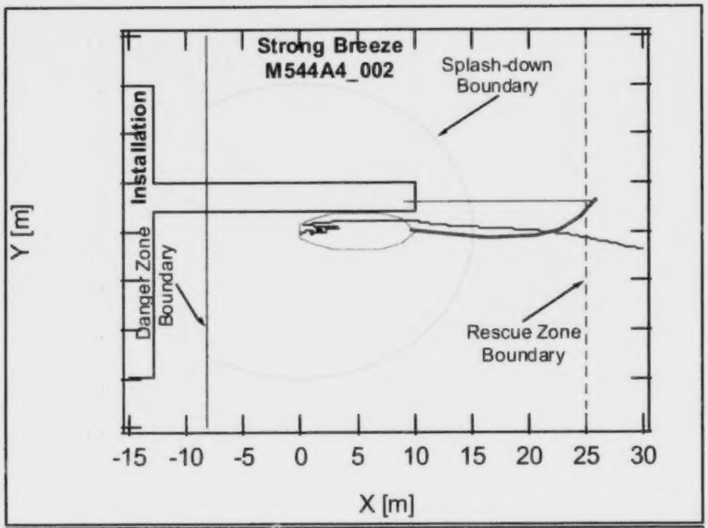
Y [m]


Strong Breeze
M544A4_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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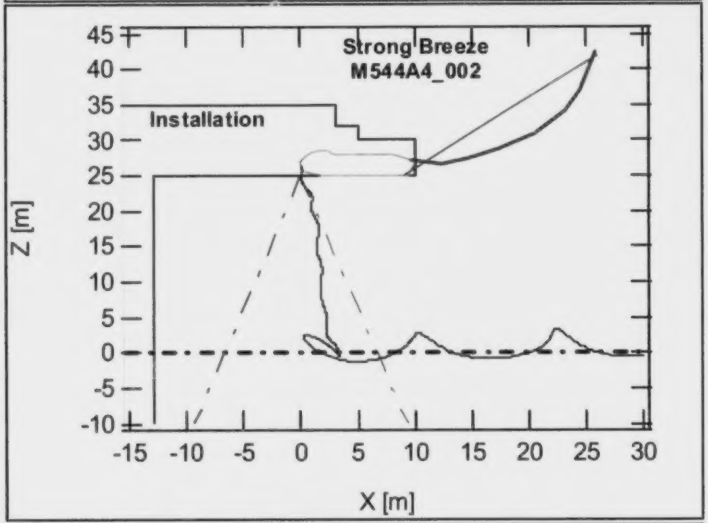
25
30
X [m]


Strong Breeze
M544A4_002
Installation
Z [m]
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25
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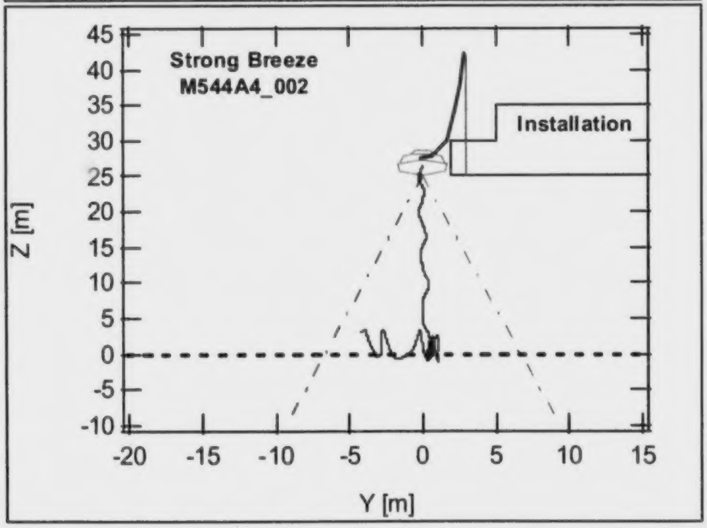
X [m]


Strong Breeze
M544A4_002
Installation
Z [m]
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-5
0
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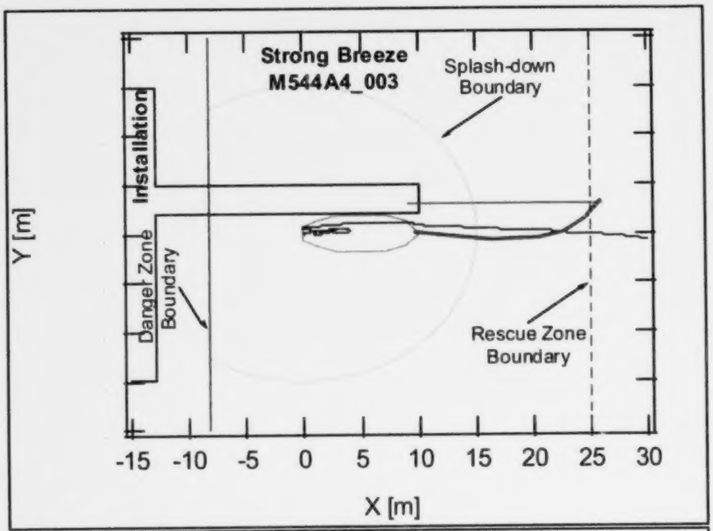
Y [m]


Strong Breeze
M544A4_003
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
X [m]
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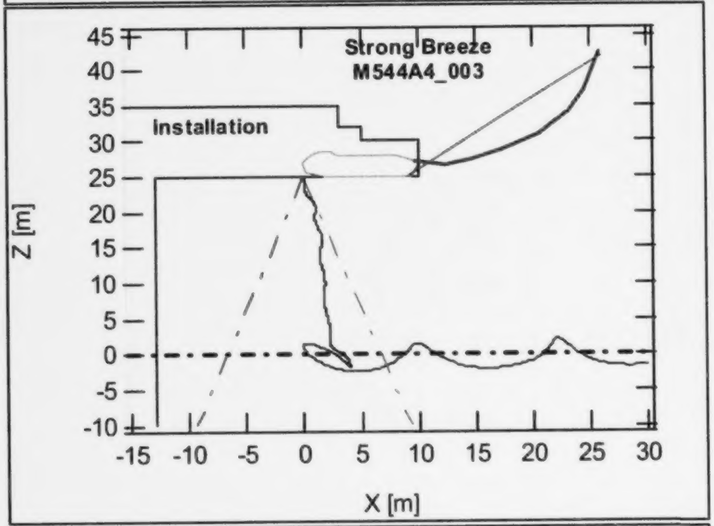
Strong Breeze
M544A4_003
Installation
Z [m]
X [m]
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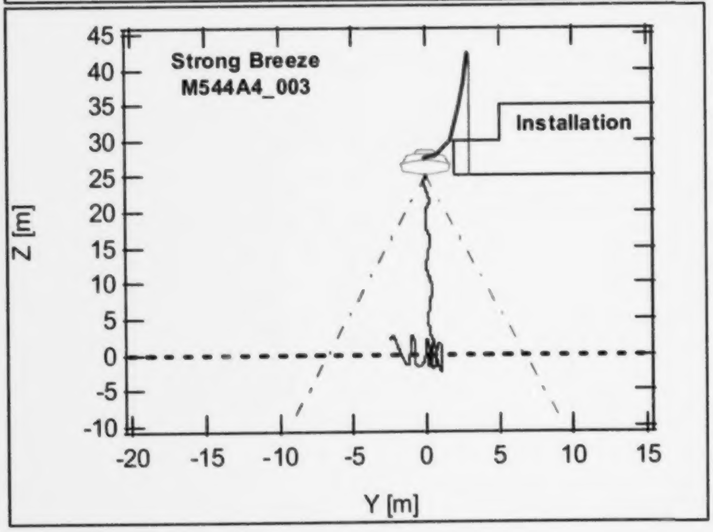
Strong Breeze
M544A4_003
Installation
Z [m]
Y [m]
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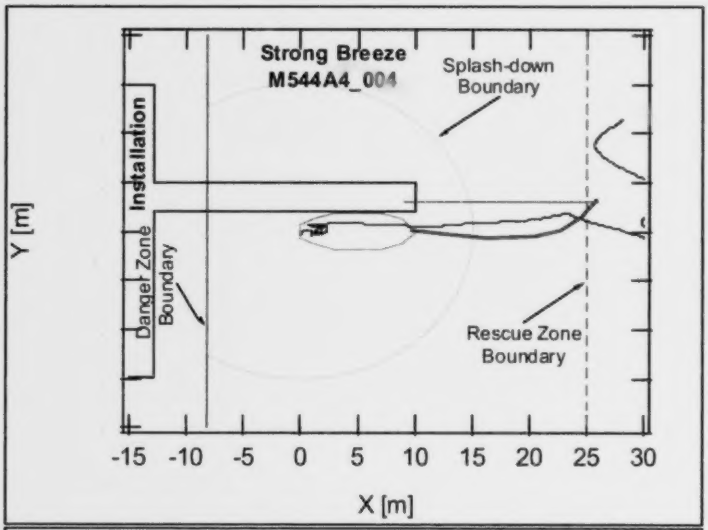
Strong Breeze
M544A4_004
Splash-down Boundary
Installation
Danger Zone
Boundary
Rescue Zone Boundary
Y [m]
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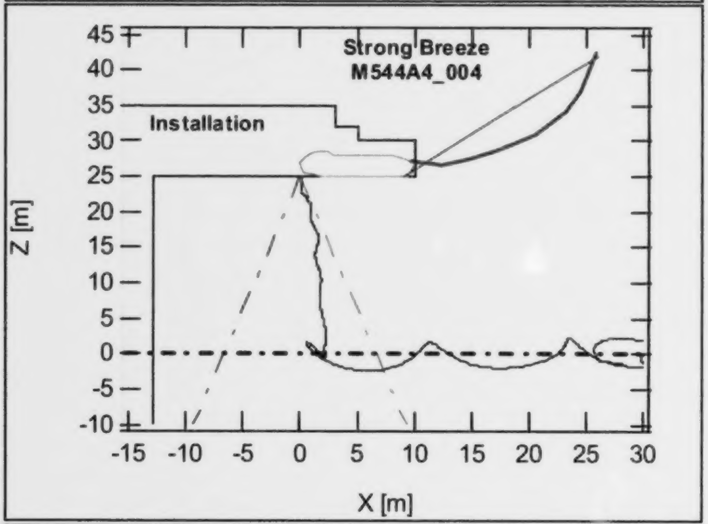
X [m]


Strong Breeze
M544A4_004
Installation
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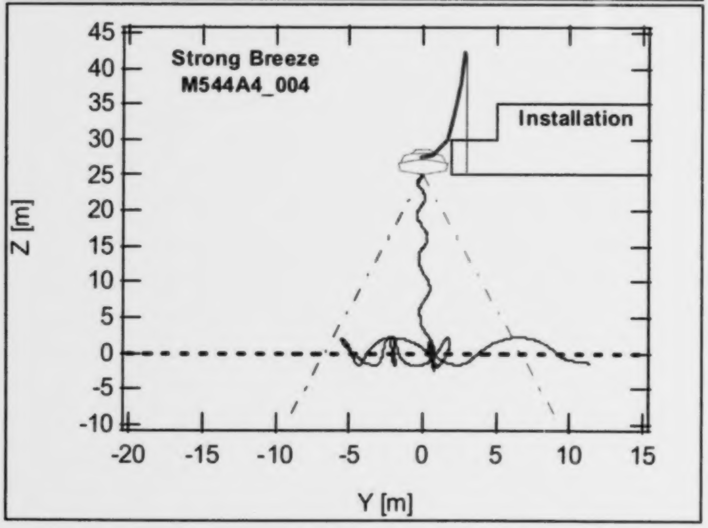
X [m]


Strong Breeze
M544A4_004
Installation
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Z [m]
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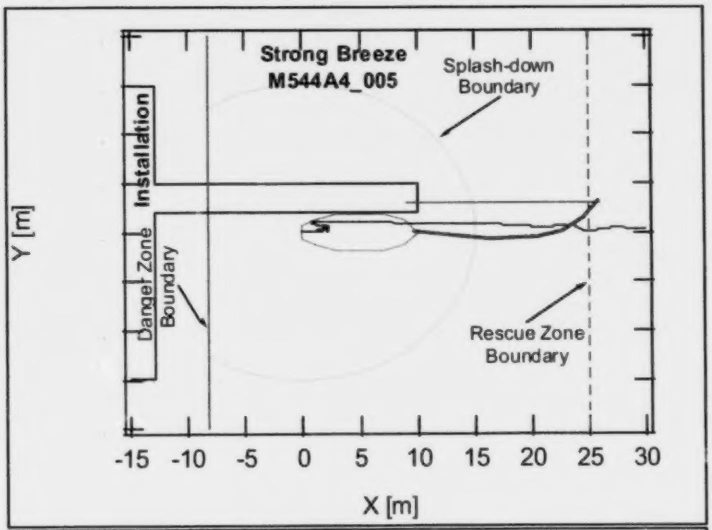
Y [m]


Strong Breeze
M544A4_005
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15
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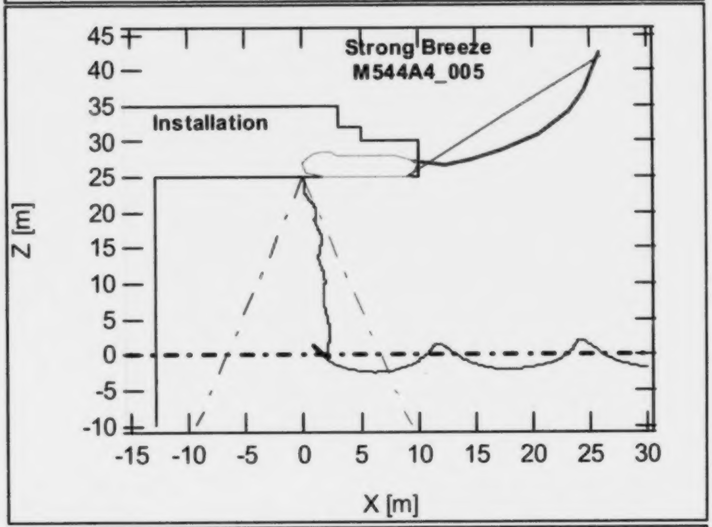
X [m]


Strong Breeze
M544A4_005
Installation
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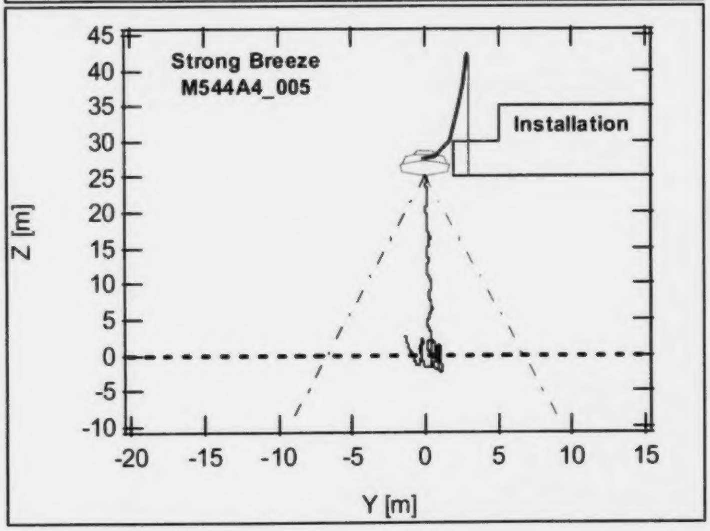
X [m]


Strong Breeze
M544A4_005
Installation
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Z [m]
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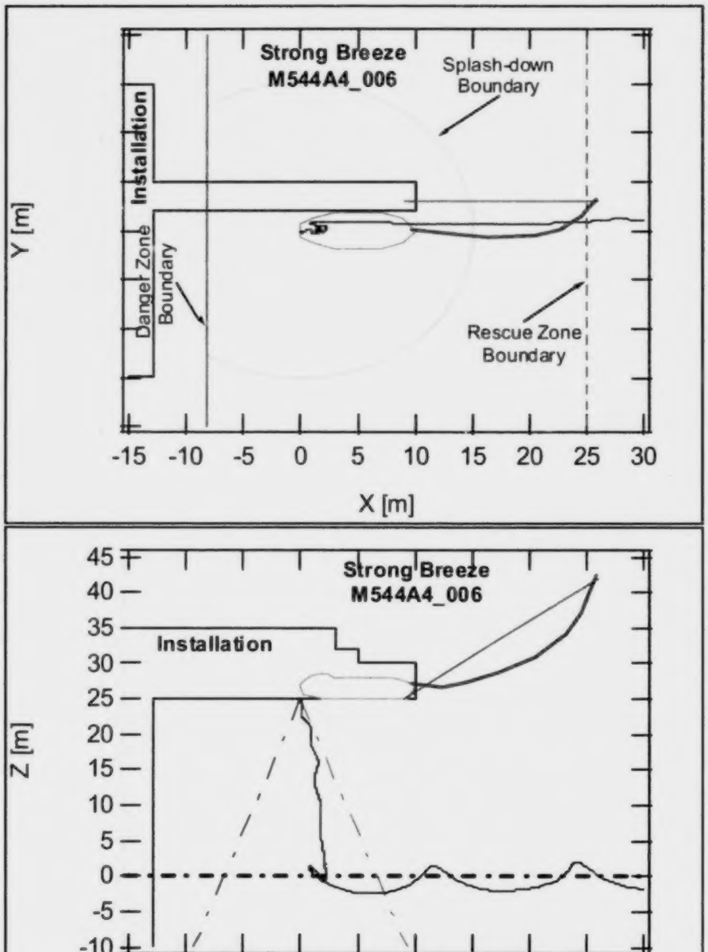
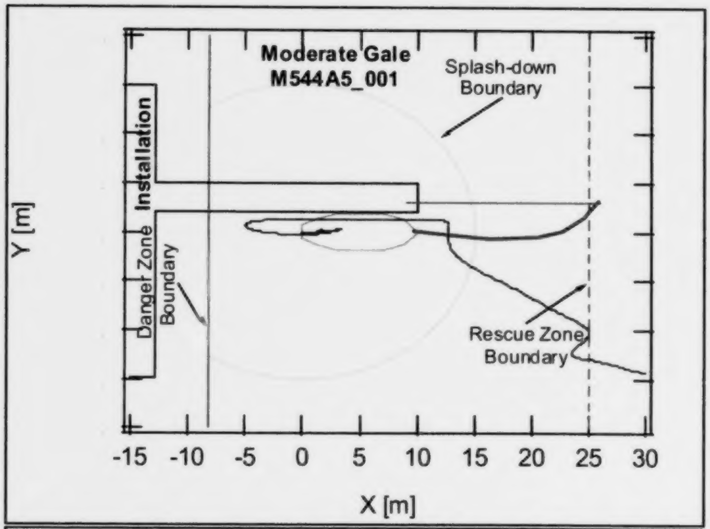
Y [m]


Strong Breeze
M544A4_006
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]
Strong Breeze
M544A4_006
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]
Strong Breeze
M544A4_006
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z [m]
-20 -15 -10 -5 0 5 10 15
Y [m]


Moderate Gale
M544A5_001
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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-5
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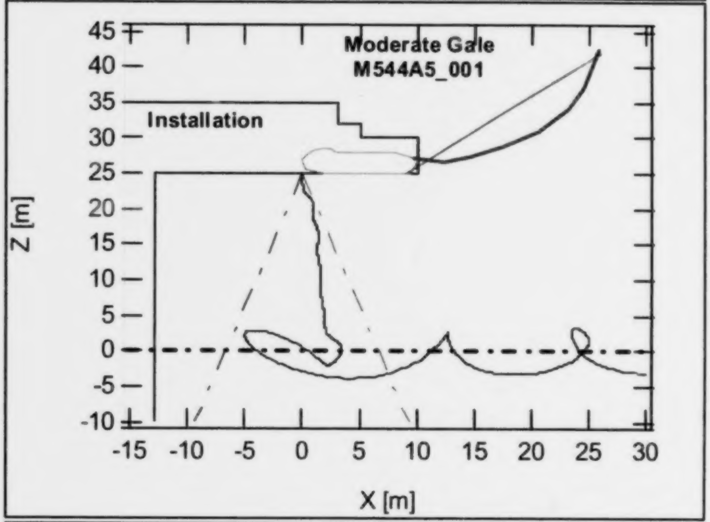
X [m]


Moderate Gale
M544A5_001
Installation
Z [m]
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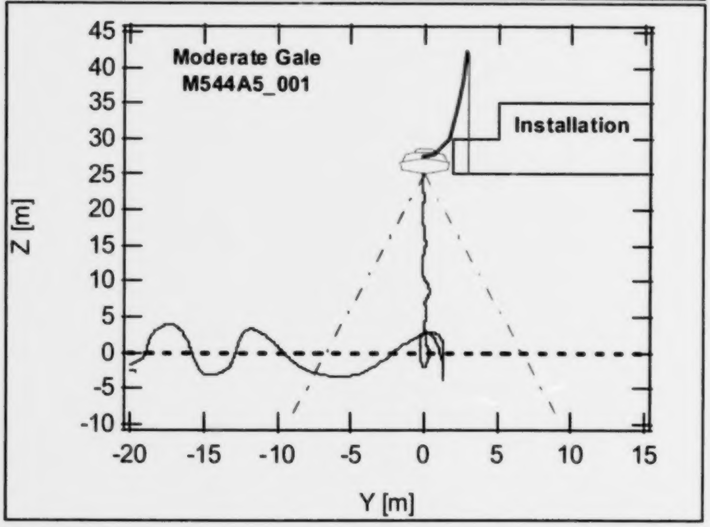
X [m]


Moderate Gale
M544A5_001
Installation
Z [m]
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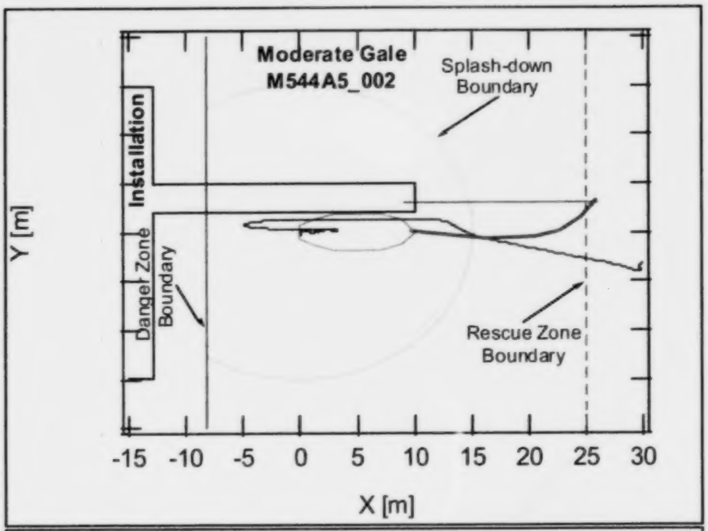
Y [m]


Moderate Gale
M544A5_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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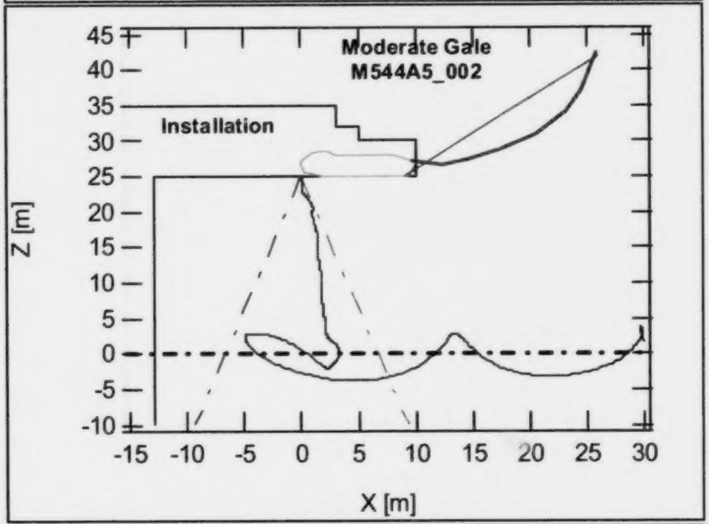
X [m]


Moderate Gale
M544A5_002
Installation
Z [m]
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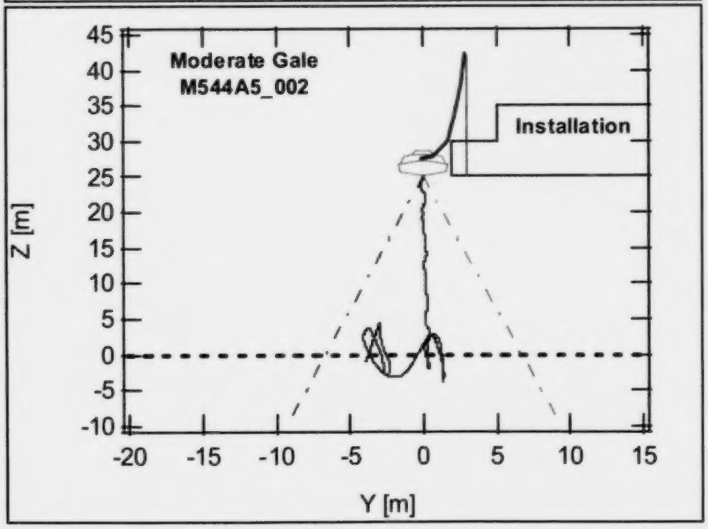
X [m]


Moderate Gale
M544A5_002
Installation
Z [m]
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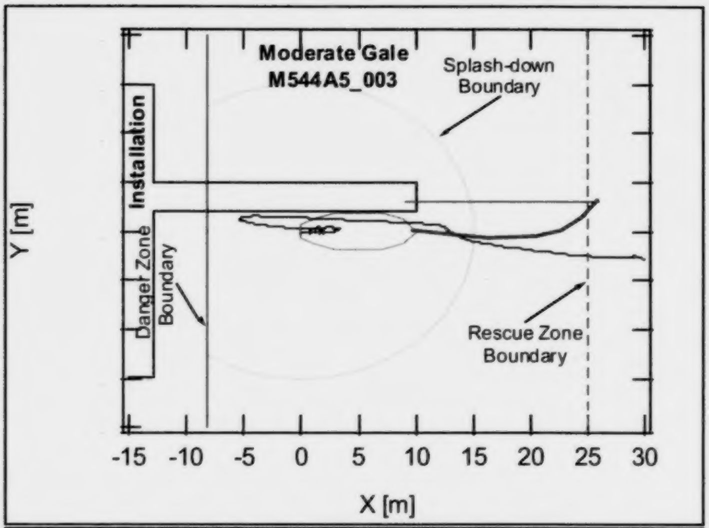
Y [m]


Moderate Gale
M544A5_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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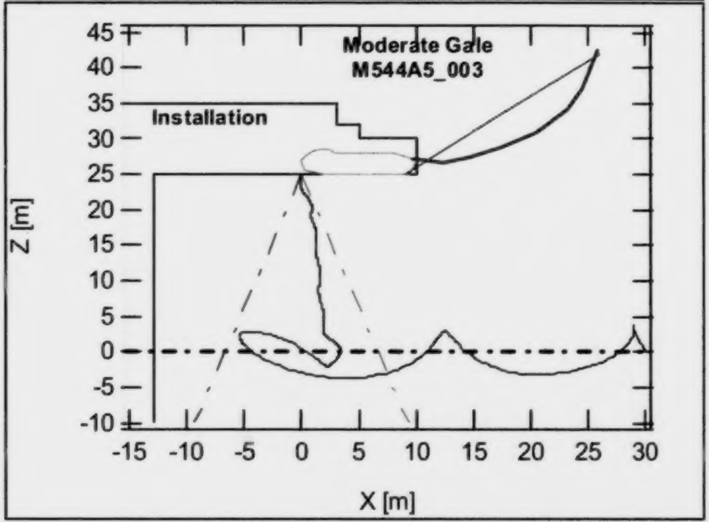
X [m]


Moderate Gale
M544A5_003
Installation
Z [m]
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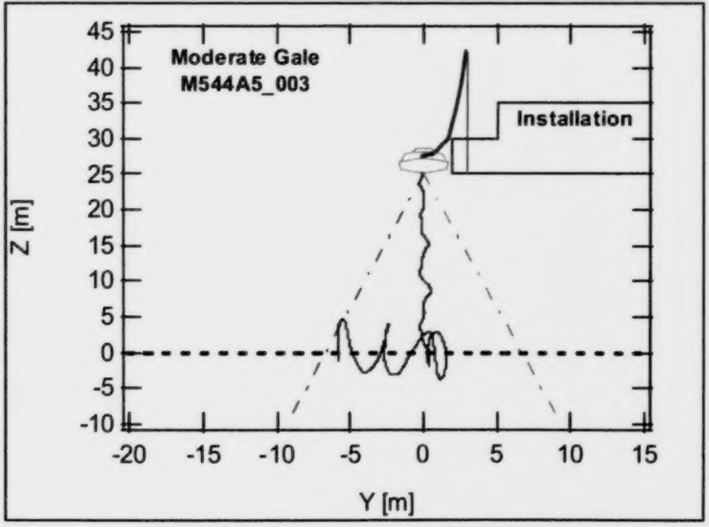
X [m]


Moderate Gale
M544A5_003
Installation
Z [m]
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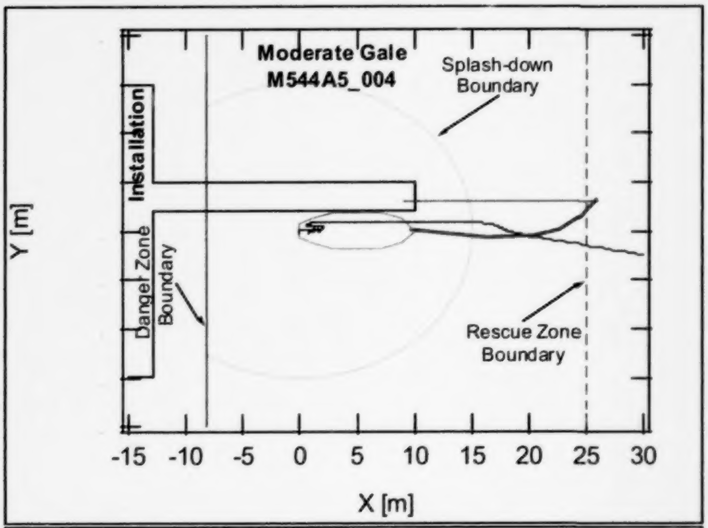
Y [m]


Moderate Gale
M544A5_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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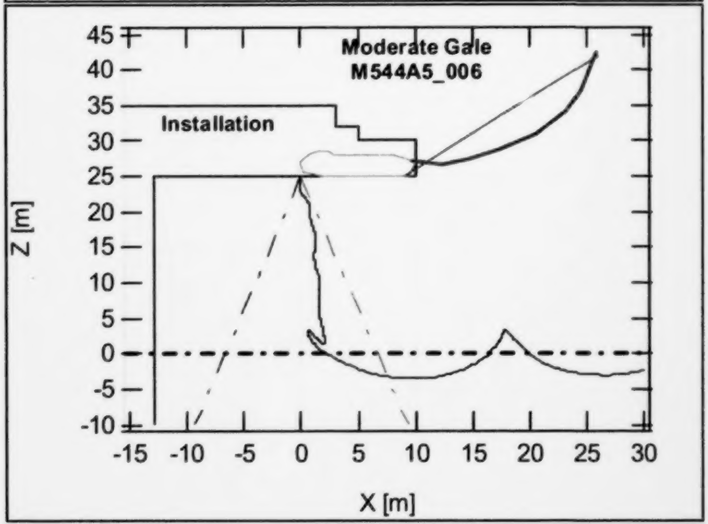
X [m]


Moderate Gale
M544A5_006
Installation
Z [m]
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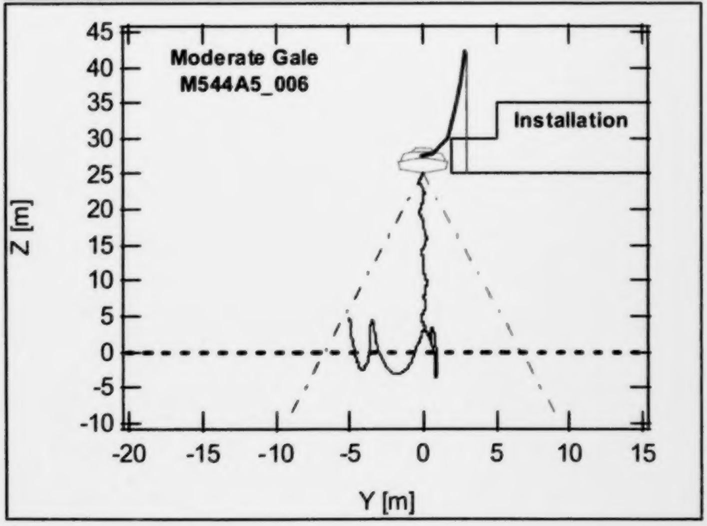
X [m]


Moderate Gale
M544A5_006
Installation
Z [m]
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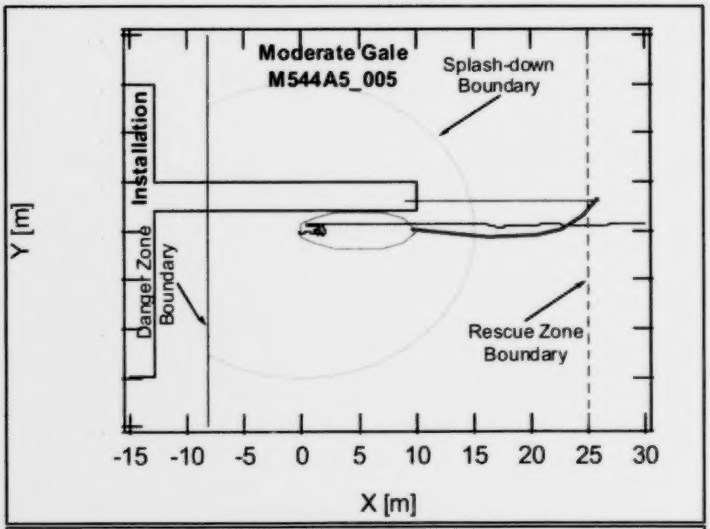
Y [m]


Moderate Gale
M544A5_005
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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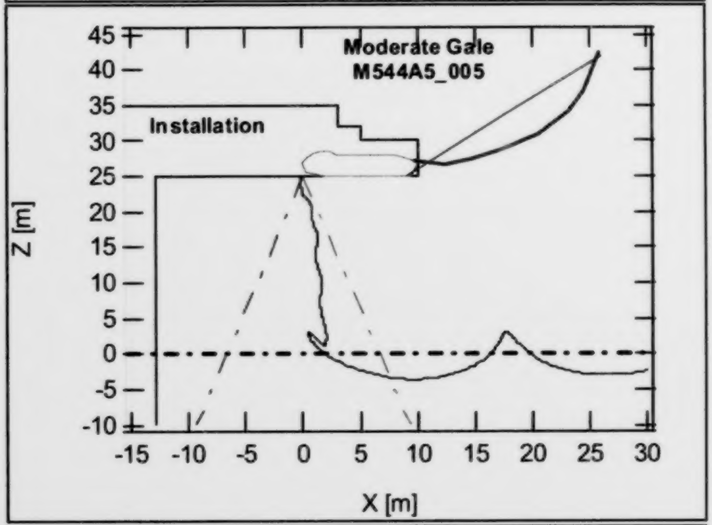
X [m]


Moderate Gale
M544A5_005
Installation
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Z [m]
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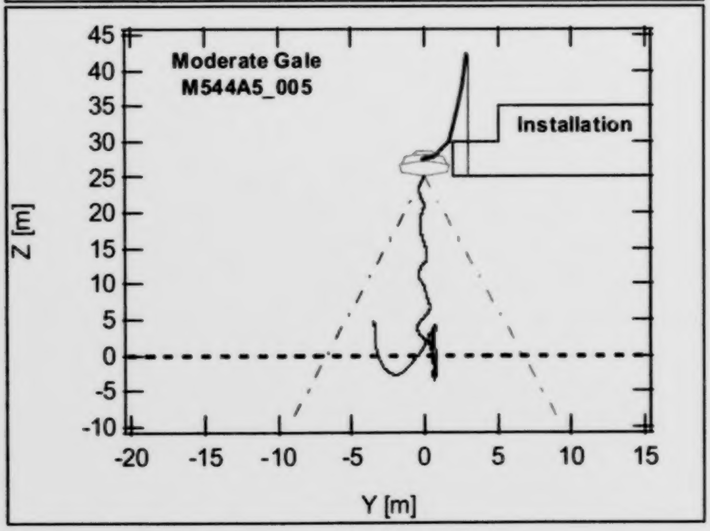
X [m]


Moderate Gale
M544A5_005
Installation
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Z [m]
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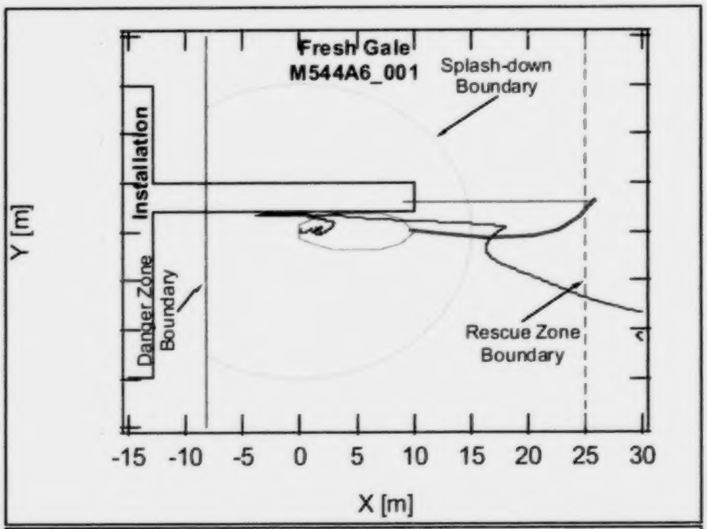
Y [m]


Fresh Gale
M544A6_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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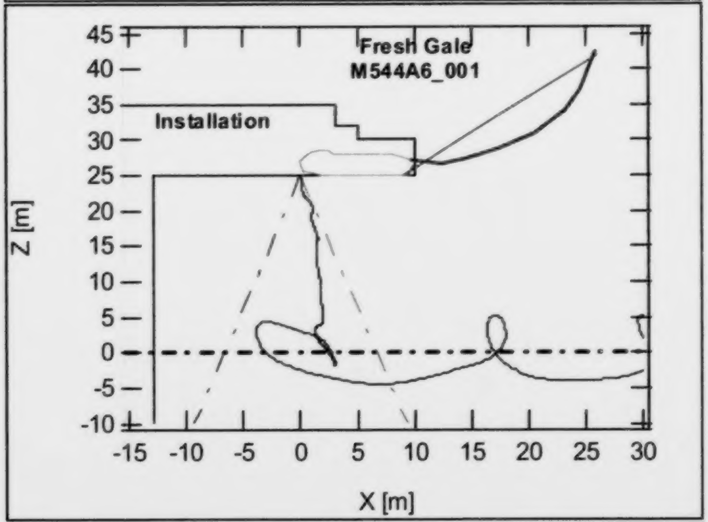
X [m]


Fresh Gale
M544A6_001
Installation
Z [m]
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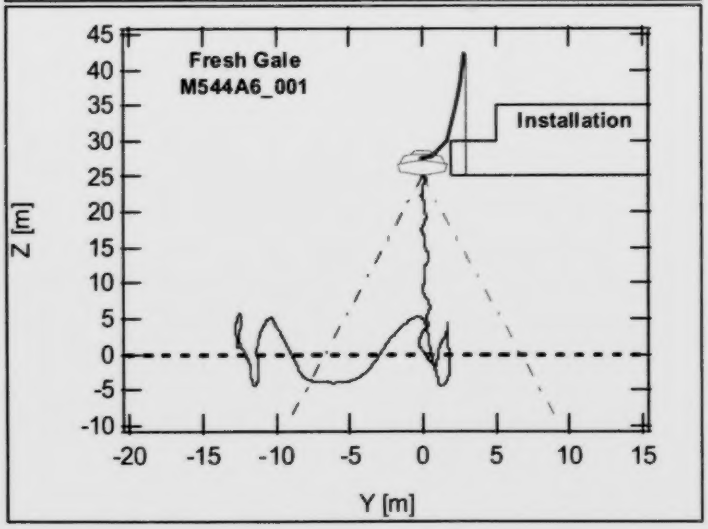
X [m]


Fresh Gale
M544A6_001
Installation
Z [m]
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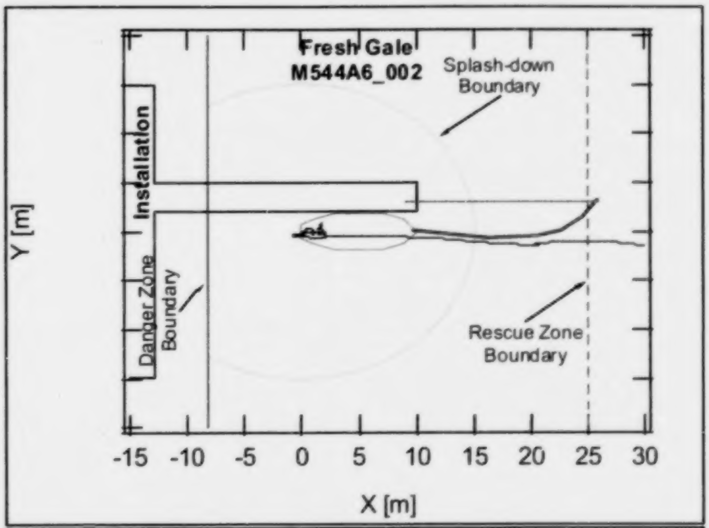
Y [m]


Fresh Gale
M544A6_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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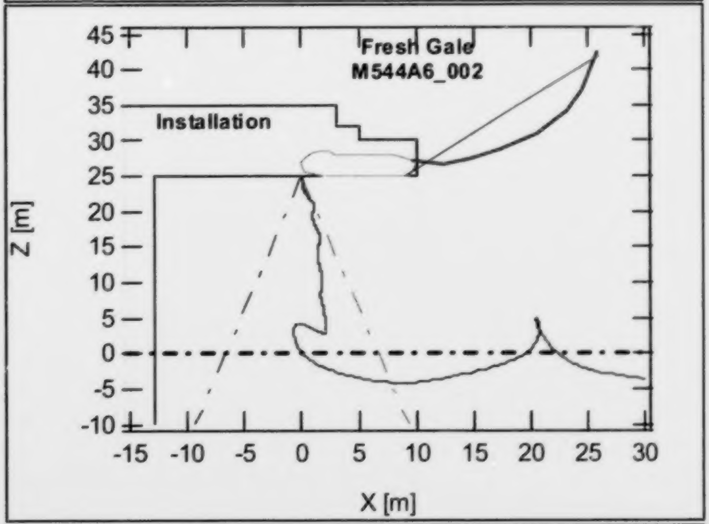
X [m]


Fresh Gale
M544A6_002
Installation
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Z [m]
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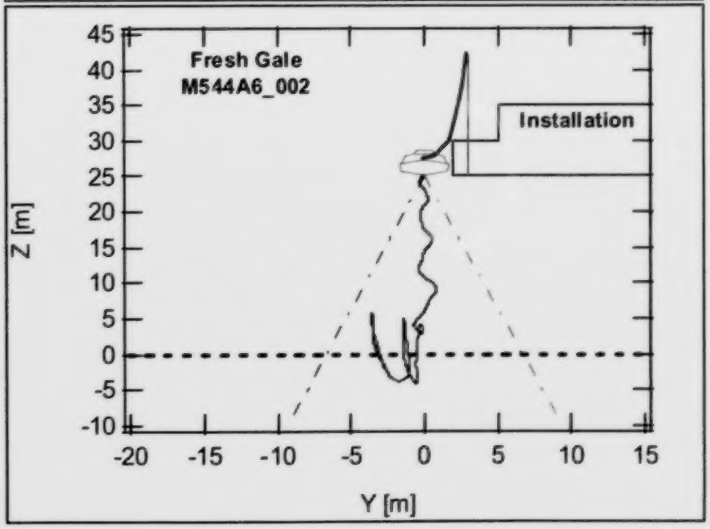
X [m]


Fresh Gale
M544A6_002
Installation
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Z [m]
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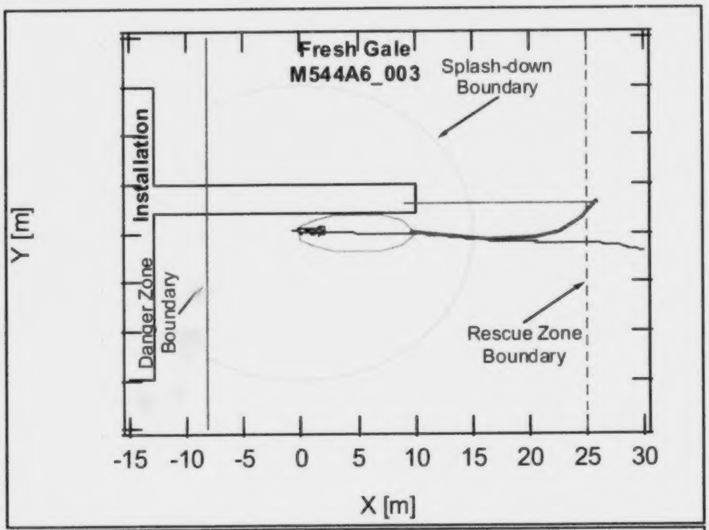
Y [m]


Fresh Gale
M544A6_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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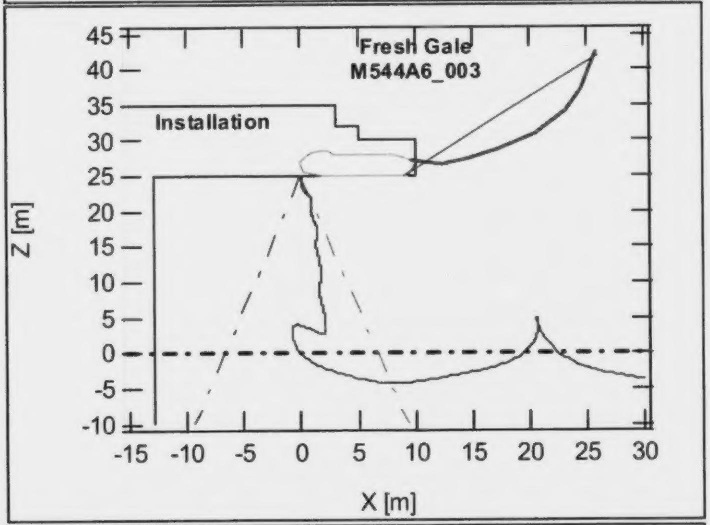
X [m]


Fresh Gale
M544A6_003
Installation
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Z [m]
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25
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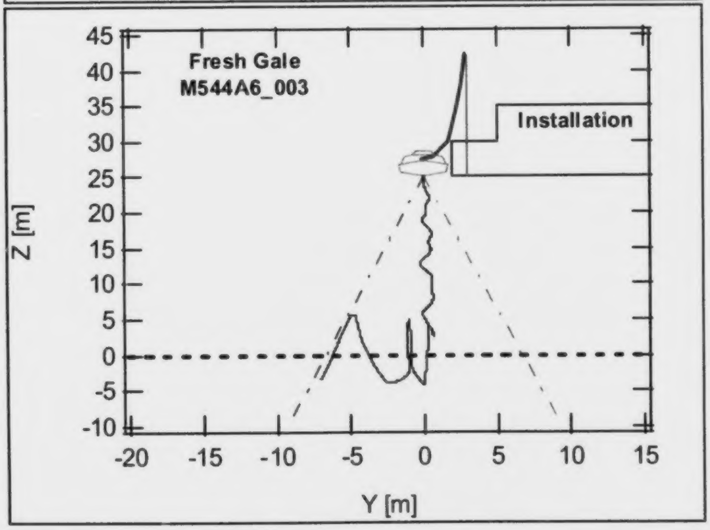
X [m]


Fresh Gale
M544A6_003
Installation
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Z [m]
-20
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-10
-5
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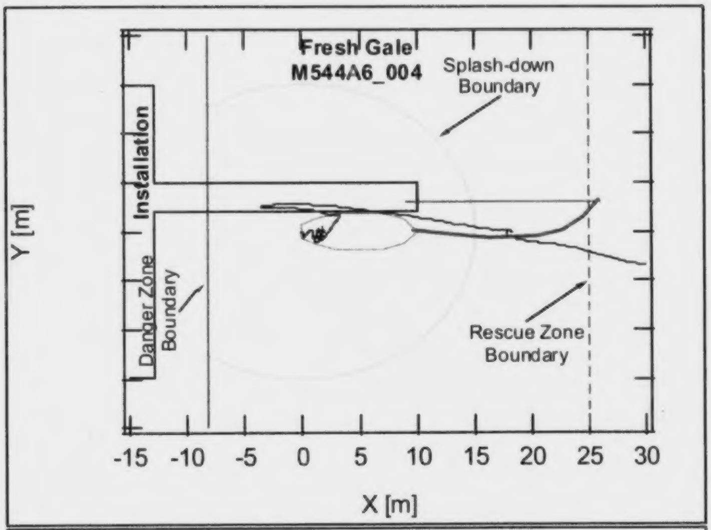
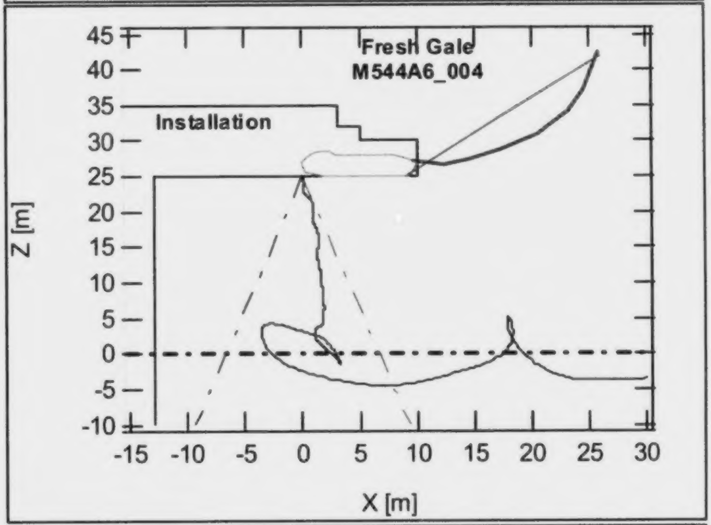
Y [m]


Fresh Gale
M544A6_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Fresh Gale
M544A6_004
Installation
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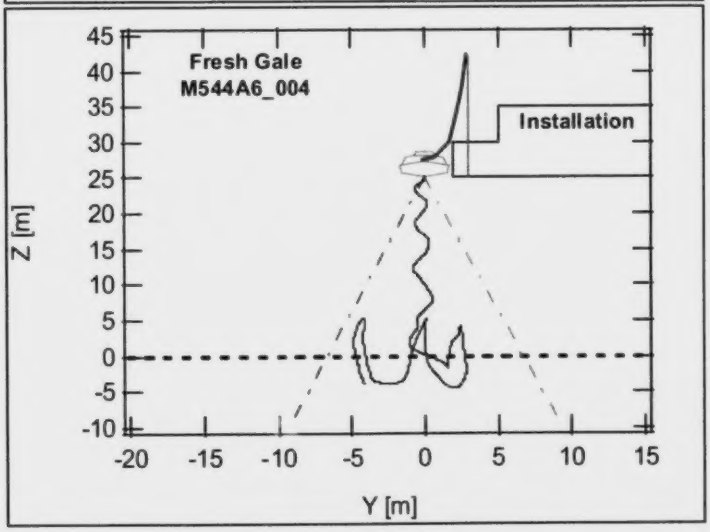
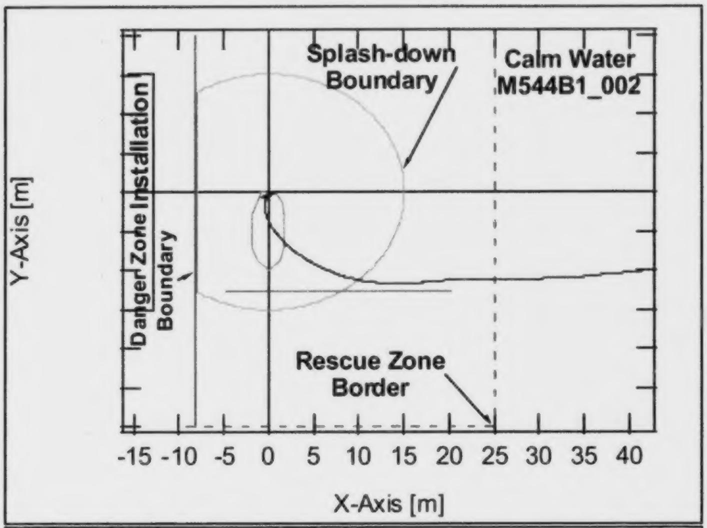
Z [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Fresh Gale
M544A6_004
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z [m]
-20 -15 -10 -5 0 5 10 15
Y [m]


Splash-down Boundary
Calm Water M544B1_002
Danger Zone Installation
Boundary
Rescue Zone Border
Y-Axis [m]
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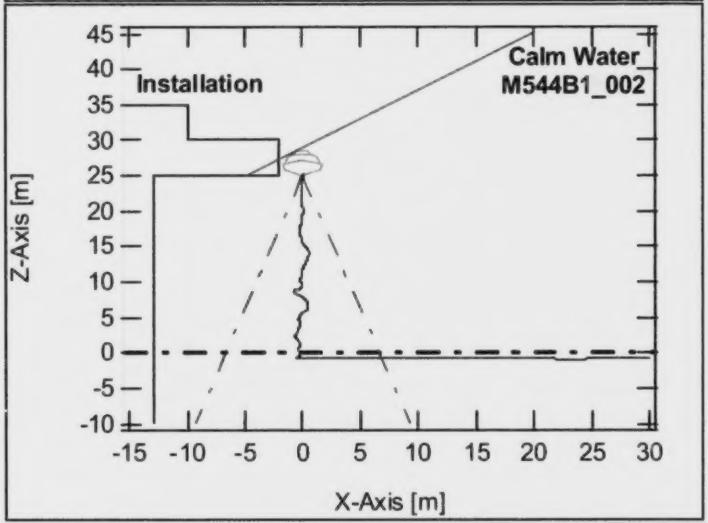
X-Axis [m]


Installation
Calm Water M544B1_002
45
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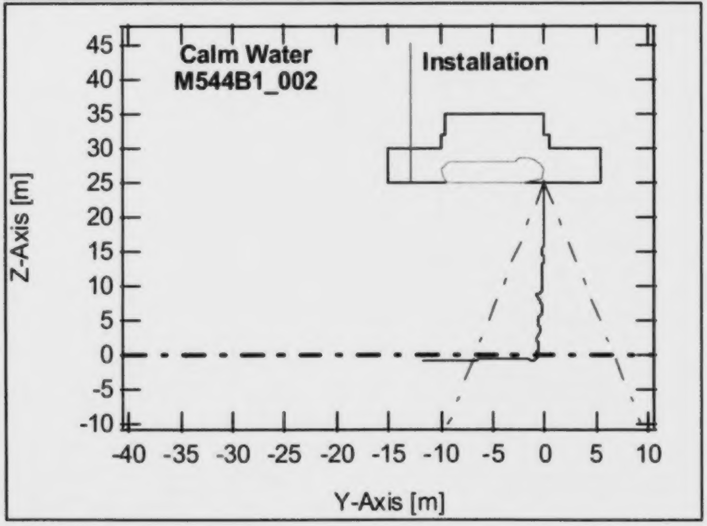
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water M544B1_002
Installation
45
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-5
-10
Z-Axis [m]
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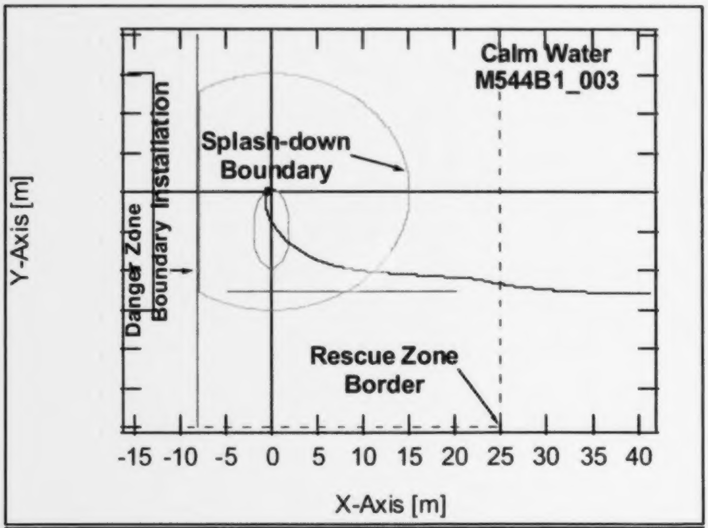
Y-Axis [m]


Calm Water
M544B1_003
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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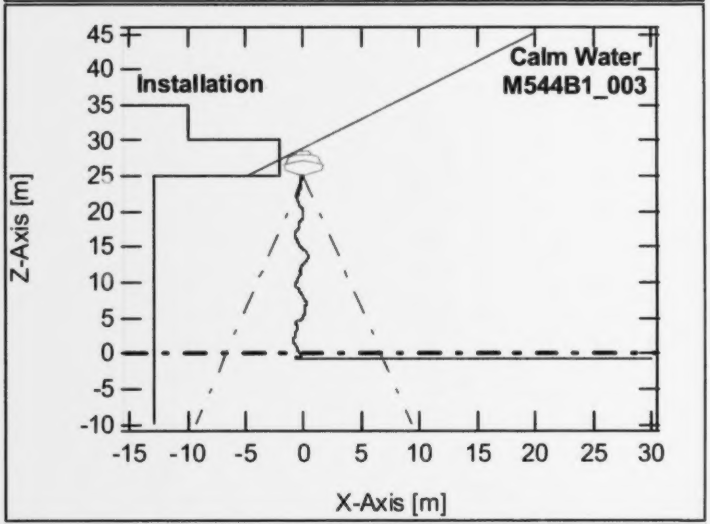
X-Axis [m]


Installation
Calm Water
M544B1_003
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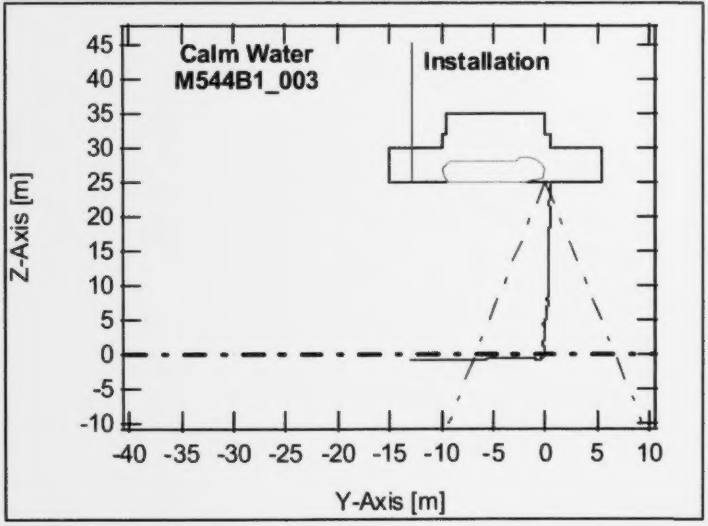
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]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M544B1_003
Installation
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Z-Axis [m]
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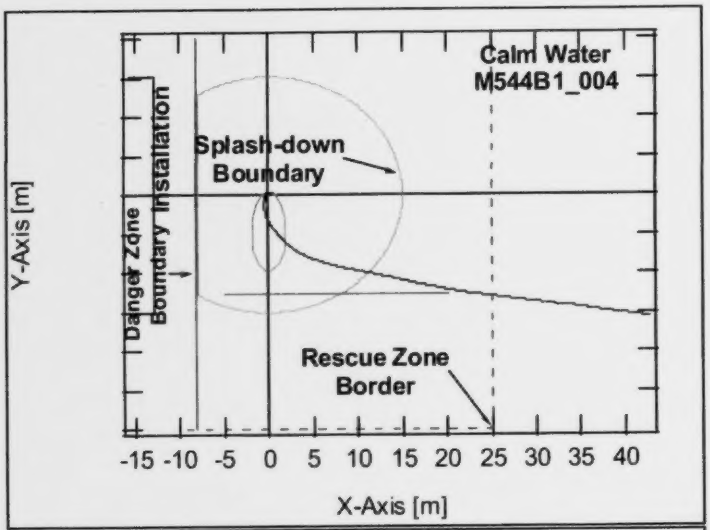
Y-Axis [m]


Calm Water
M544B1_004
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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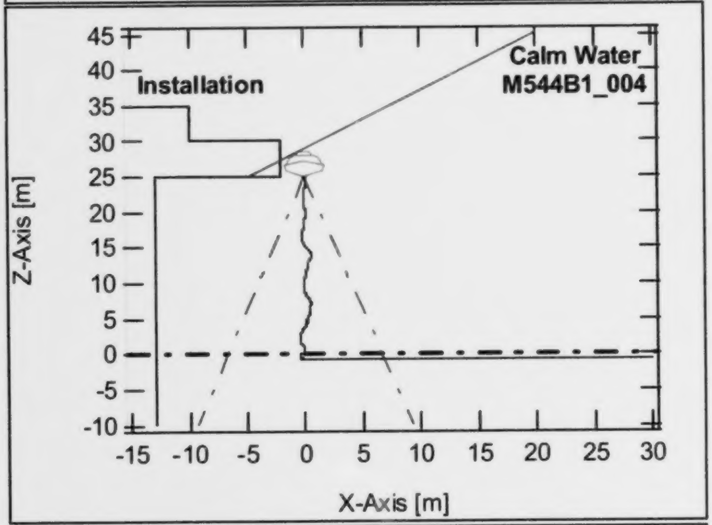
X-Axis [m]


Installation
Calm Water
M544B1_004
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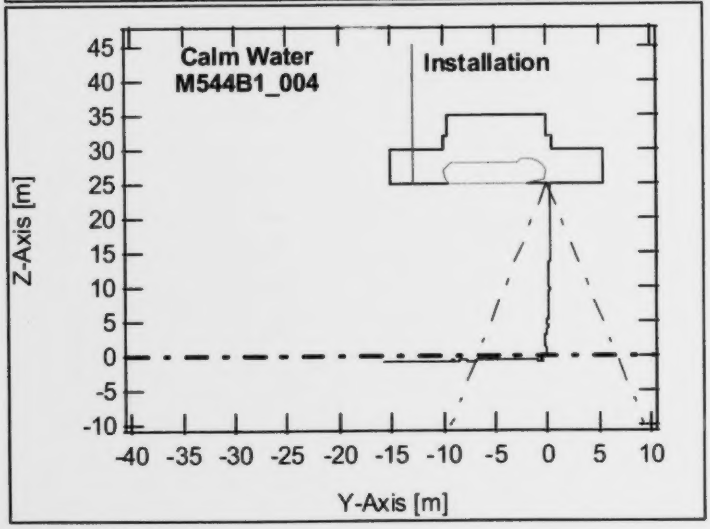
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544B1_004
Installation
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Z-Axis [m]
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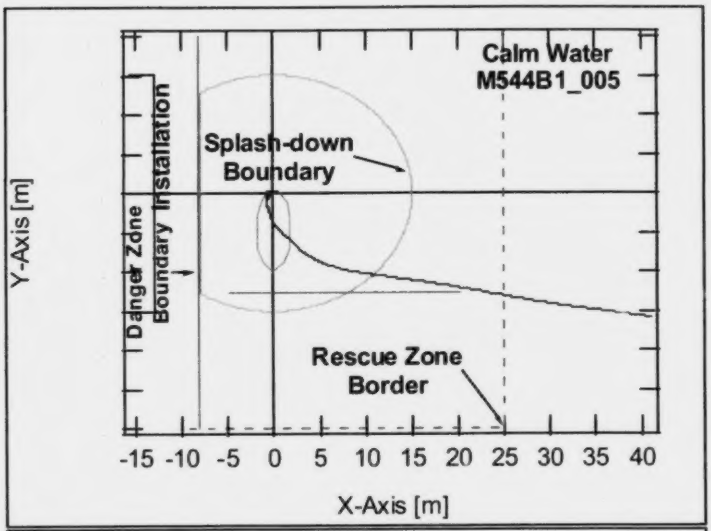
Y-Axis [m]


Calm Water
M544B1_005
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
X-Axis [m]
-15
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35
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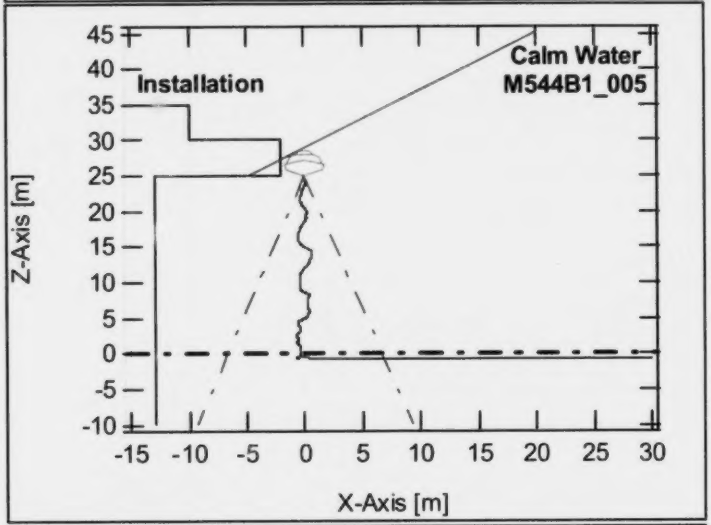
Installation
Calm Water
M544B1_005
Z-Axis [m]
X-Axis [m]
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-5
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15
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25
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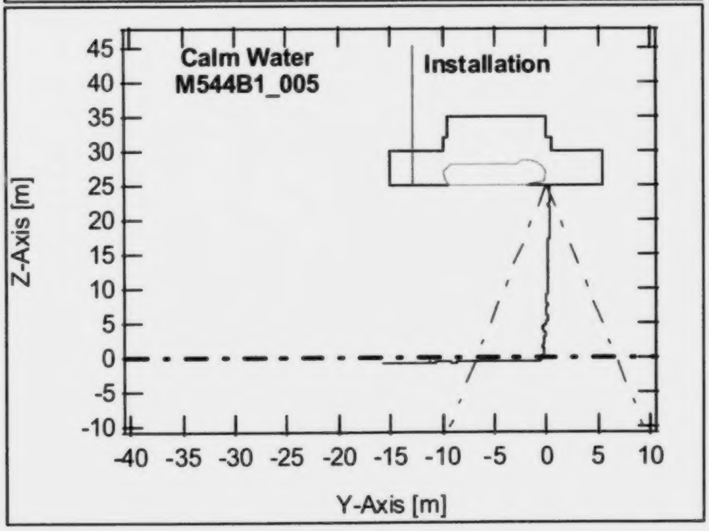
Calm Water
M544B1_005
Installation
Z-Axis [m]
Y-Axis [m]
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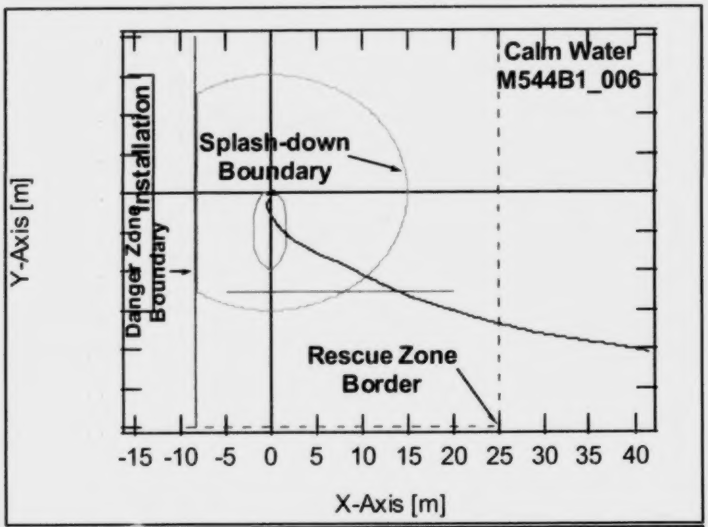
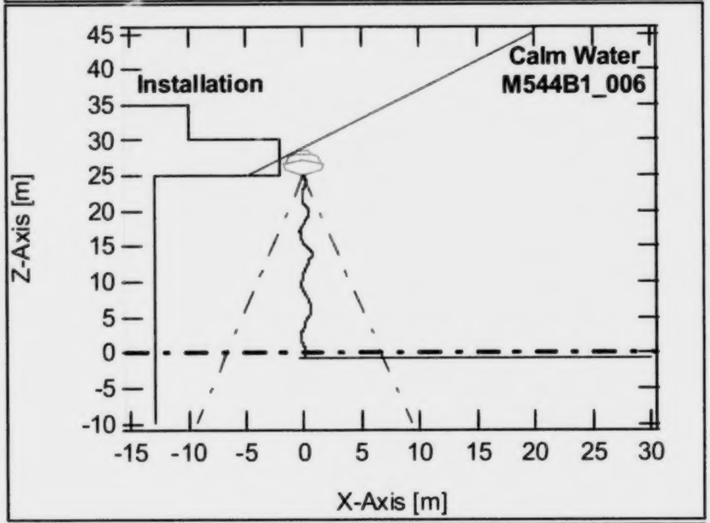

Calm Water
M544B1_006
Installation
Danger Zone Boundary
Splash-down Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Calm Water
M544B1_006
Installation
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10
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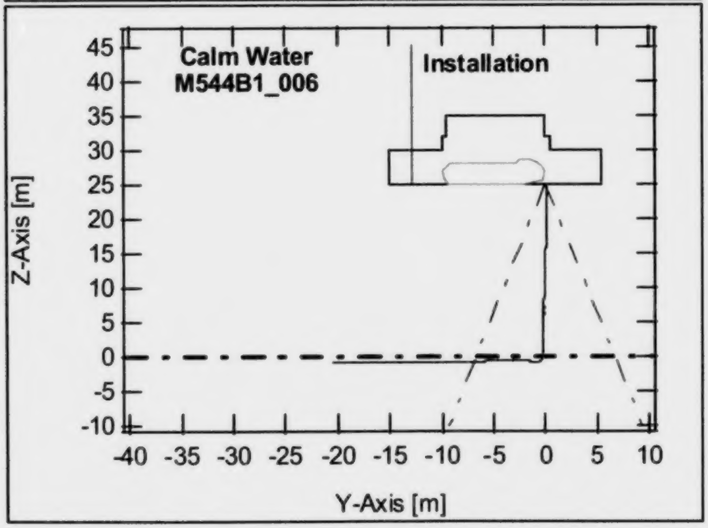
0
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544B1_006
Installation
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Z-Axis [m]
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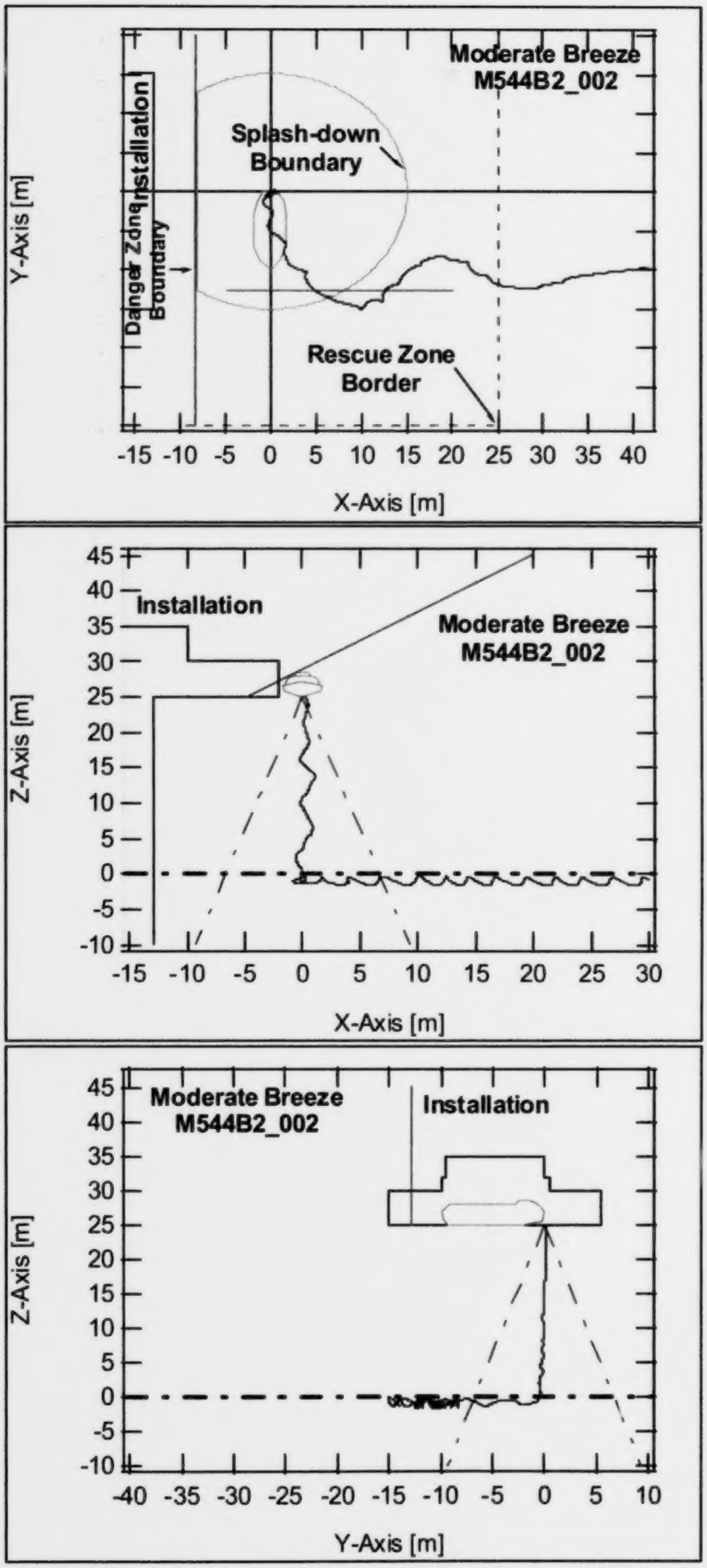
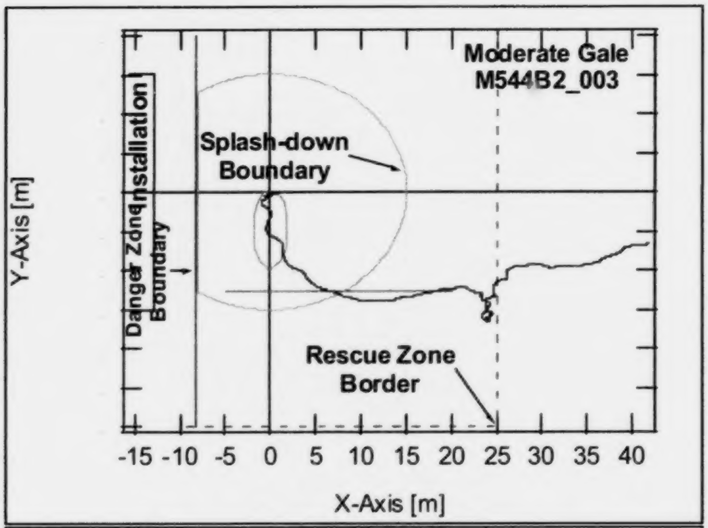
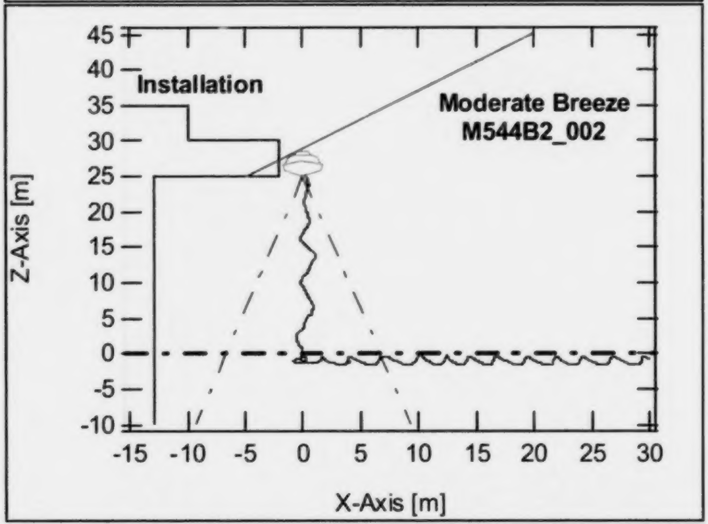
Y-Axis [m]


Moderate Breeze
M544B2_002
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
Installation
Moderate Breeze
M544B2_002
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Moderate Breeze
M544B2_002
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Gale
M544B2_003
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Installation
Moderate Breeze
M544B2_002
Z-Axis [m]
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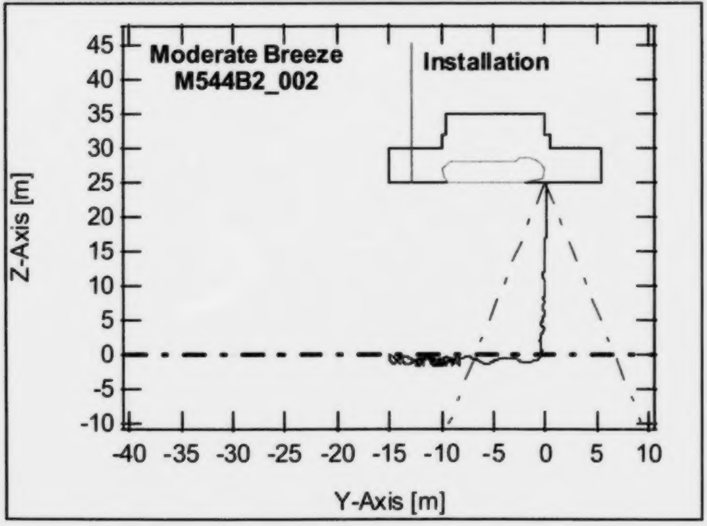
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Breeze
M544B2_002
Installation
Z-Axis [m]
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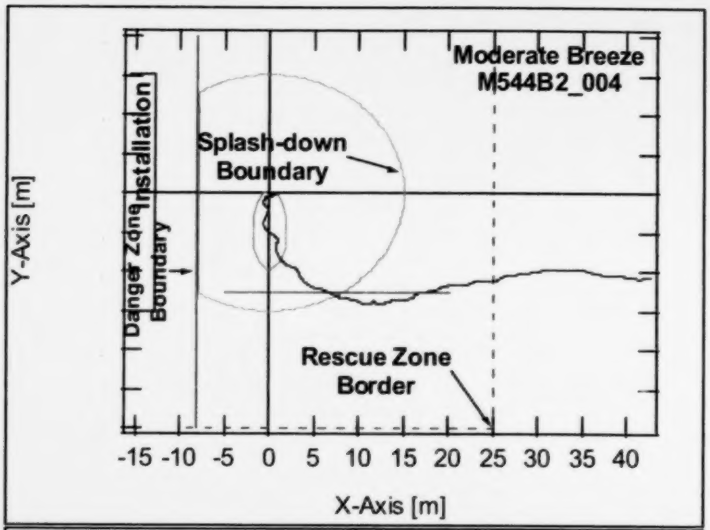
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Breeze
M544B2_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15
-10
-5
0
5
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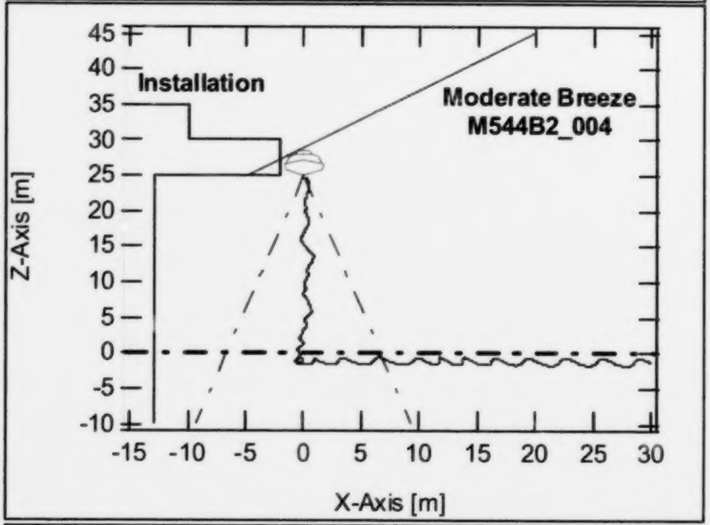
40
X-Axis [m]


Installation
Moderate Breeze
M544B2_004
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Z-Axis [m]
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-10
-5
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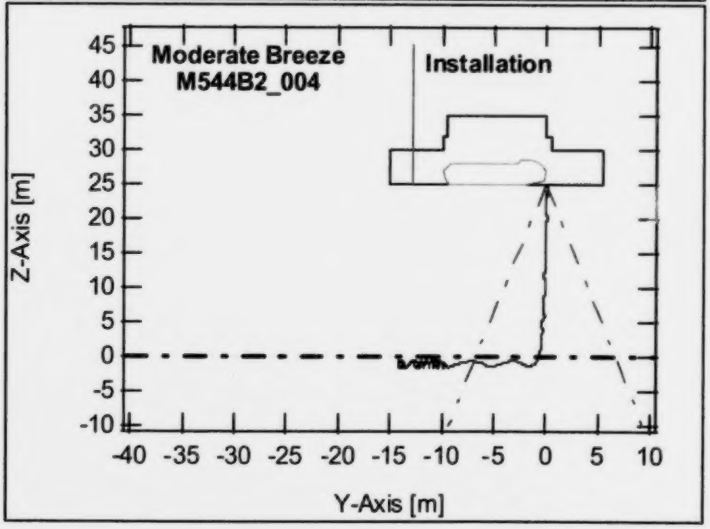
30
X-Axis [m]


Moderate Breeze
M544B2_004
Installation
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Z-Axis [m]
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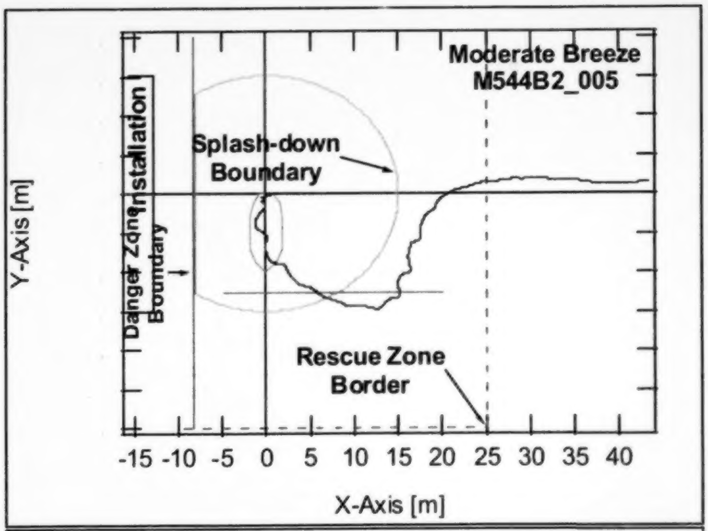
Y-Axis [m]


Moderate Breeze
M544B2_005
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
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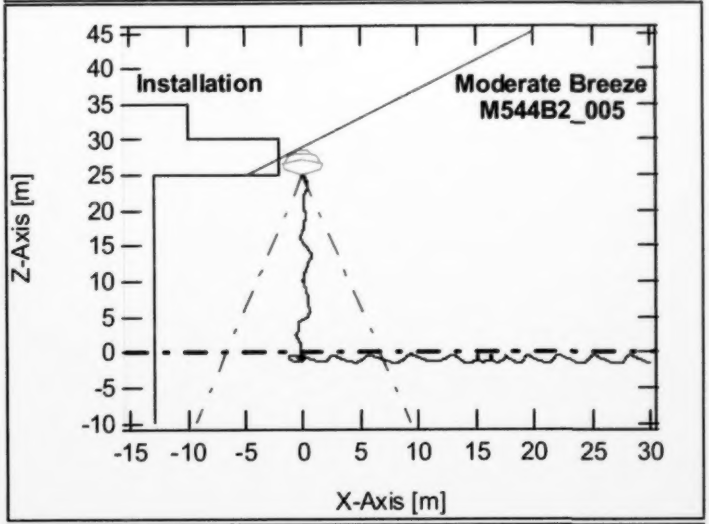
Installation
Moderate Breeze
M544B2_005
Z-Axis [m]
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X-Axis [m]
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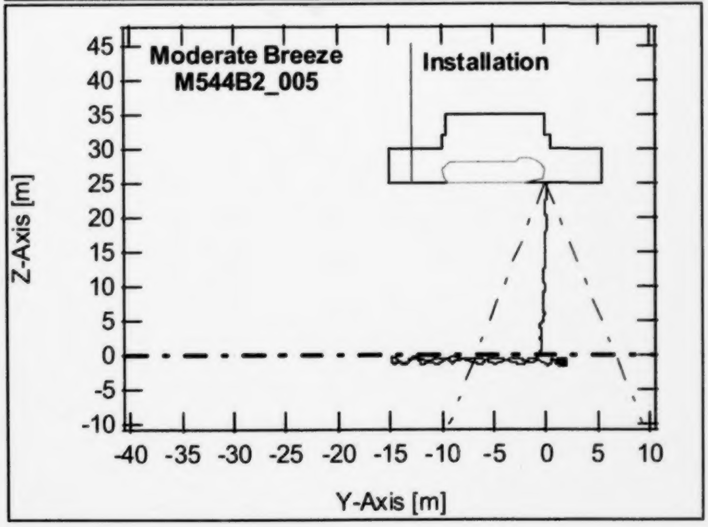
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M544B2_005
Installation
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Y-Axis [m]
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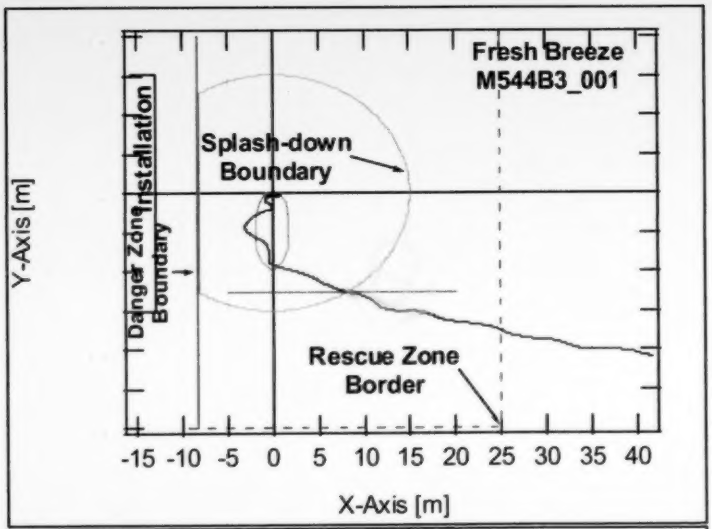
Fresh Breeze
M544B3_001
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
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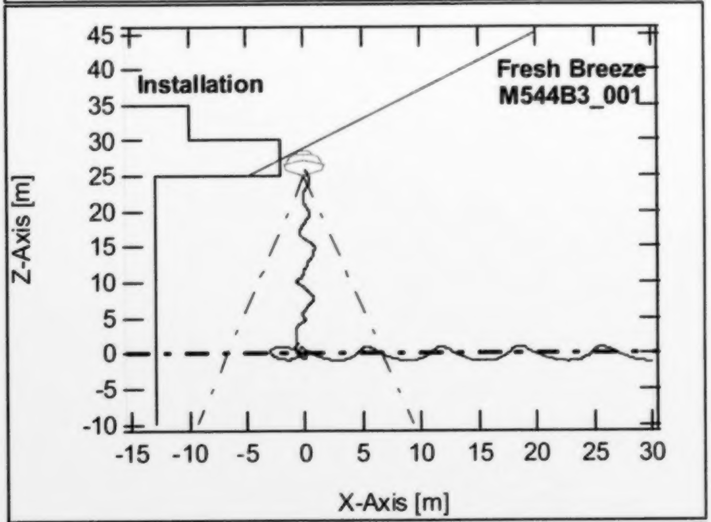
X-Axis [m]


Installation
Fresh Breeze
M544B3_001
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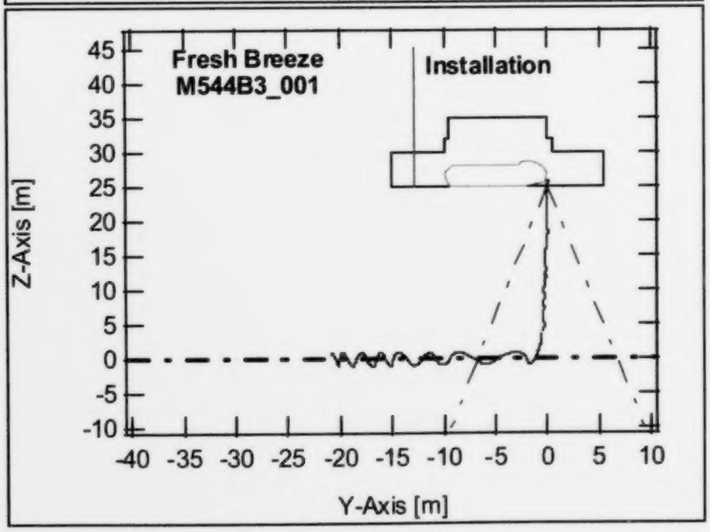
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Fresh Breeze
M544B3_001
Installation
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-10
Z-Axis [m]
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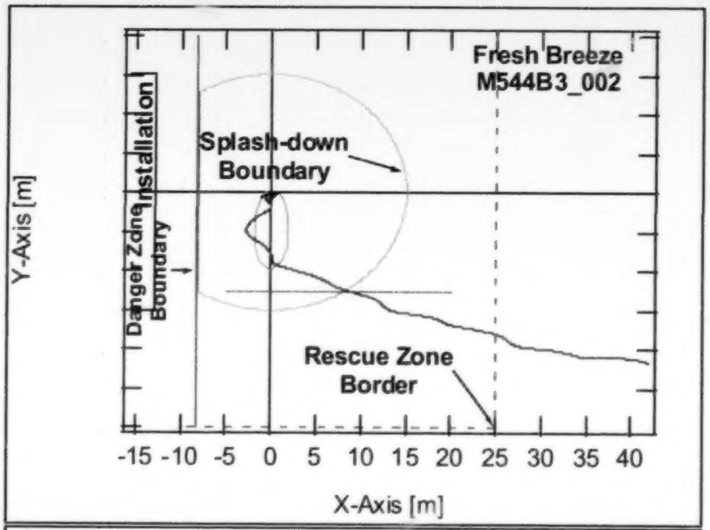
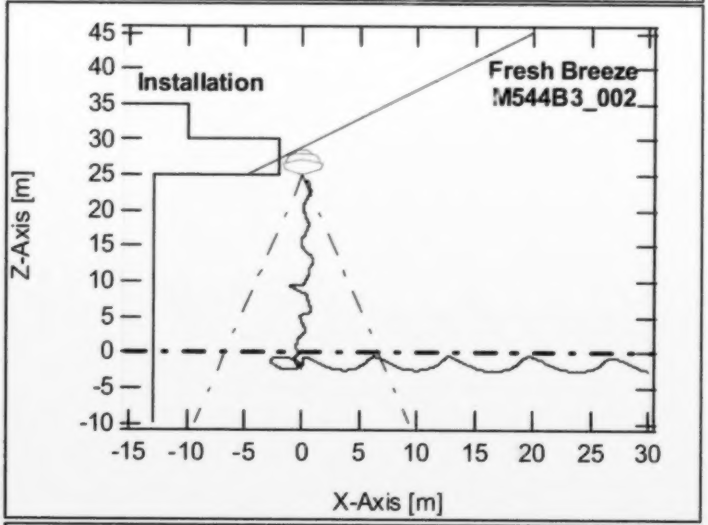
Y-Axis [m]


Fresh Breeze
M544B3_002
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Installation
Fresh Breeze
M544B3_002
Z-Axis [m]
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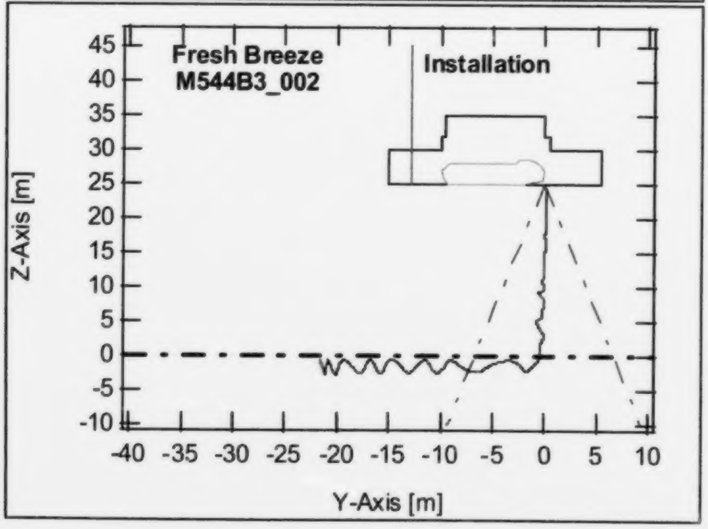
X-Axis [m]


Fresh Breeze
M544B3_002
Installation
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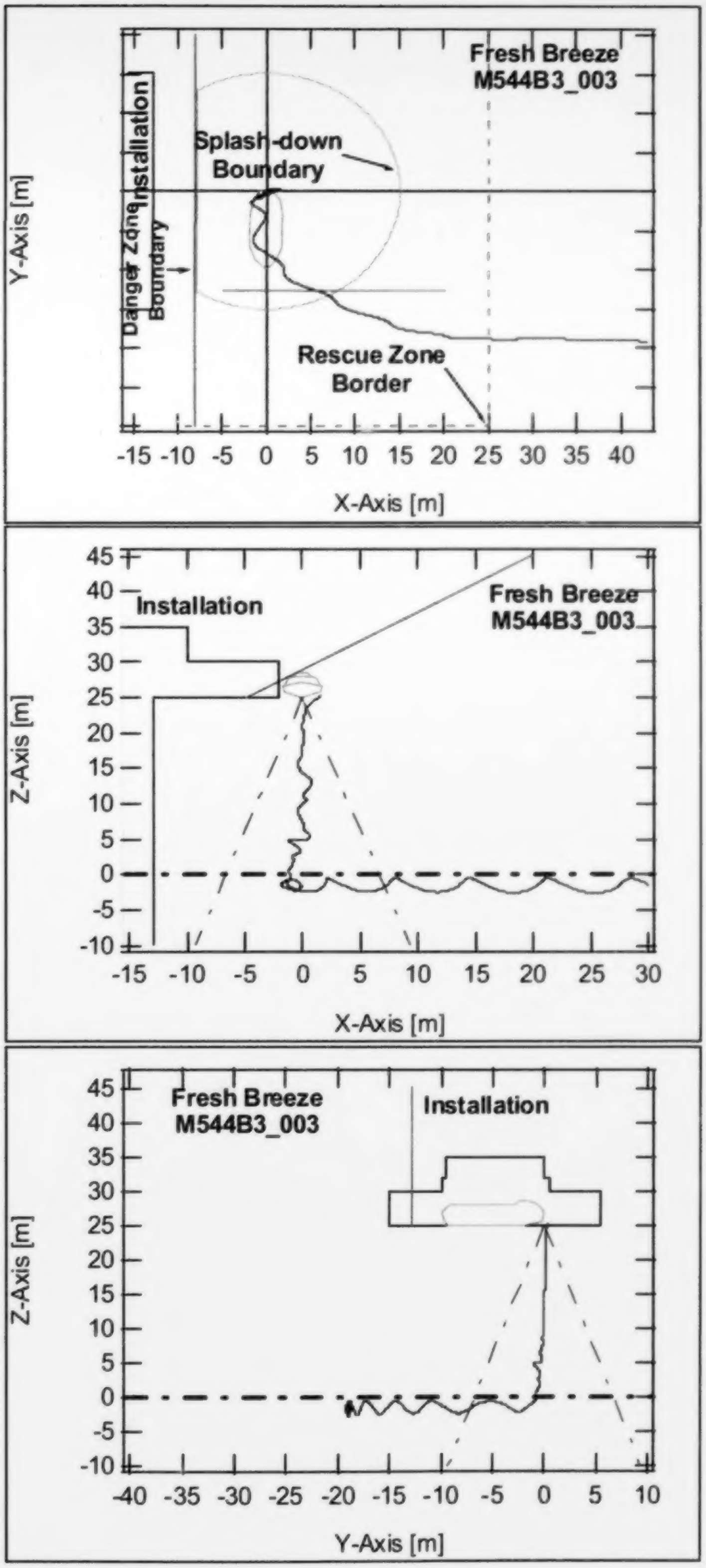
Y-Axis [m]


Fresh Breeze
M544B3_003
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
Installation
Fresh Breeze
M544B3_003
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
Fresh Breeze
M544B3_003
Installation
Z-Axis [m]
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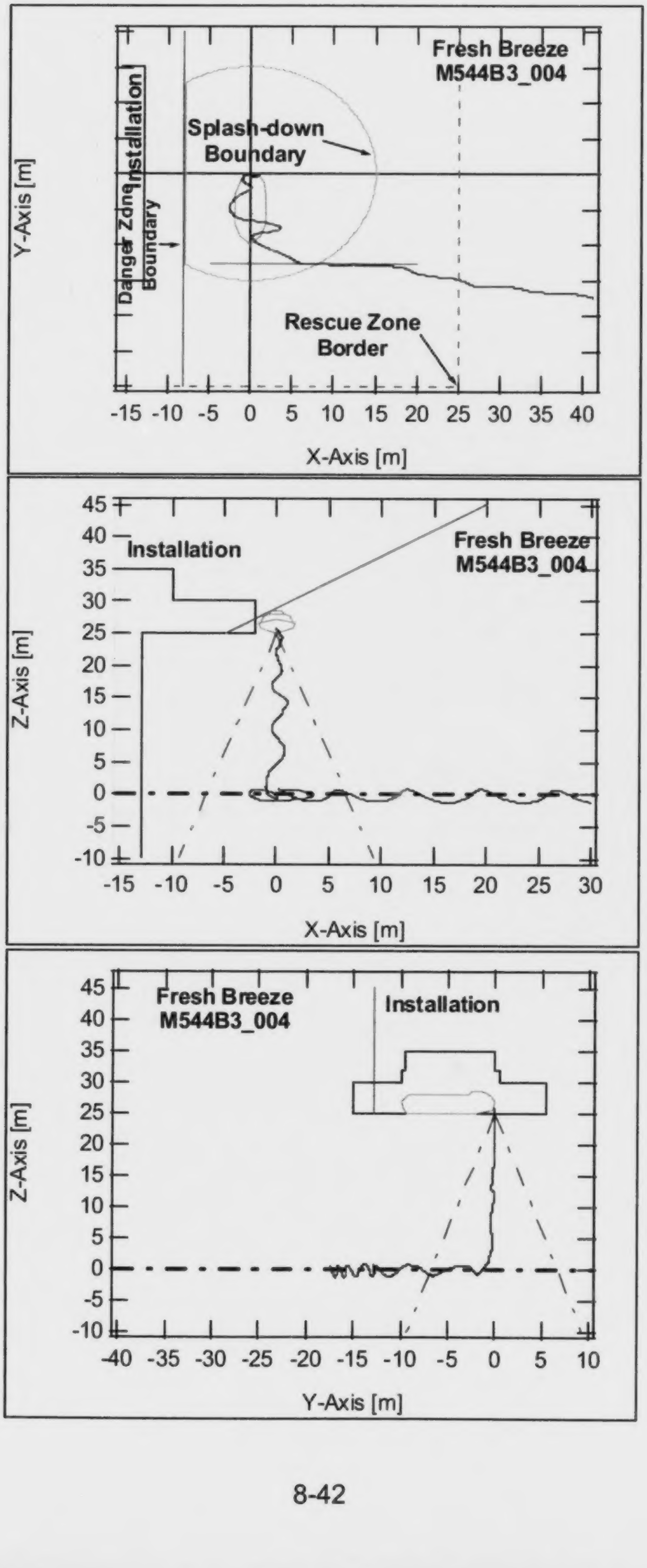
Y-Axis [m]


Fresh Breeze
M544B3_004
Danger Zone Boundary
Installation
Splash-down Boundary
Rescue Zone Border
Y-Axis [m]
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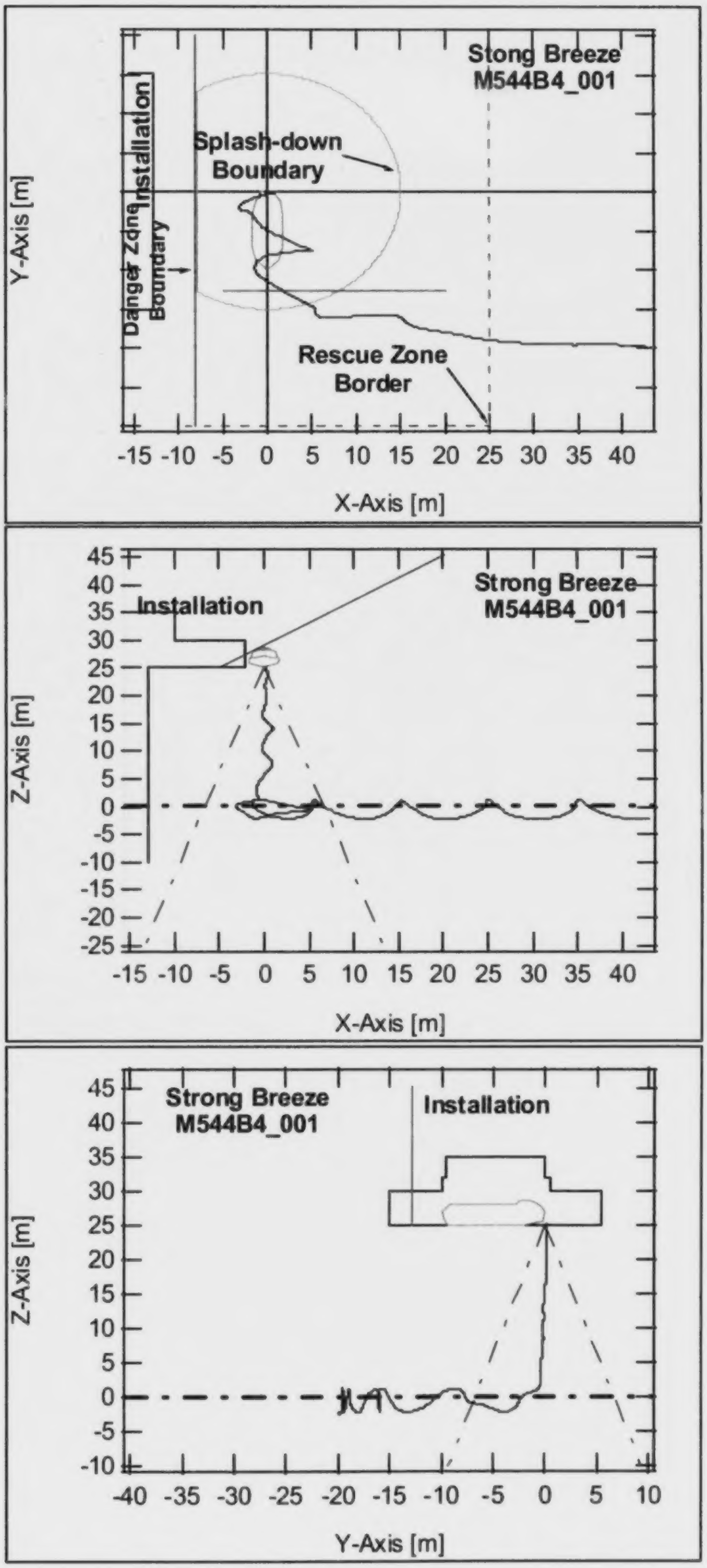
X-Axis [m]
Installation
Fresh Breeze
M544B3_004
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Fresh Breeze
M544B3_004
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Stong Breeze
M544B4_001
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
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X-Axis [m]
Strong Breeze
M544B4_001
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]
Strong Breeze
M544B4_001
Installation
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Z-Axis [m]
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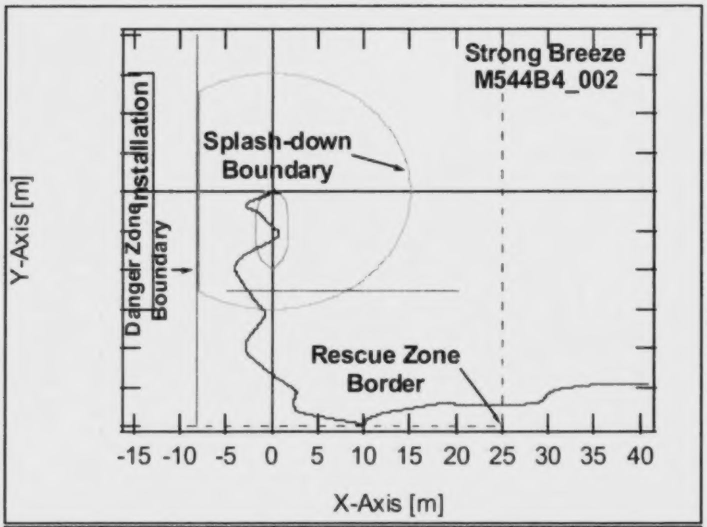
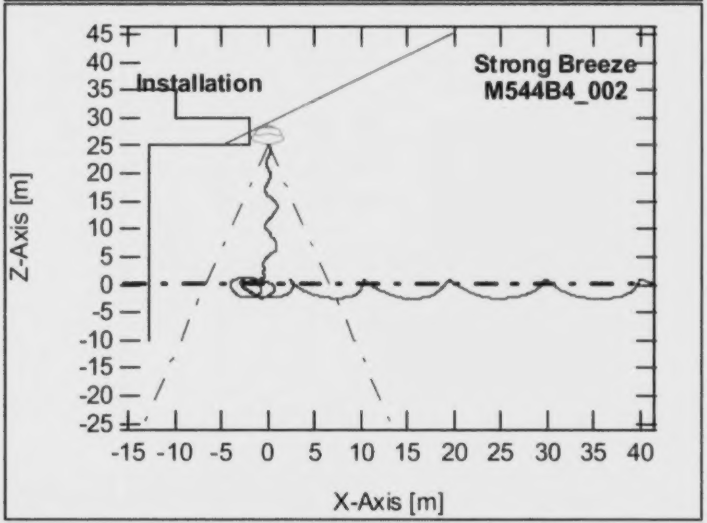
Y-Axis [m]


Strong Breeze
M544B4_002
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Installation
Strong Breeze
M544B4_002
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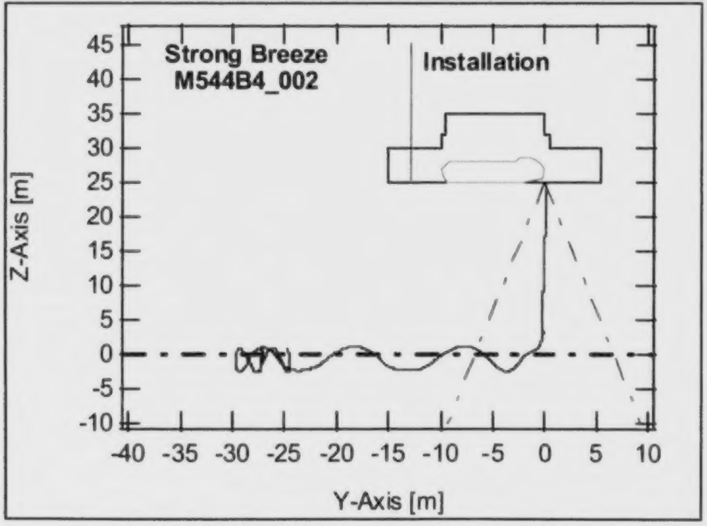
-20
-25
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Strong Breeze
M544B4_002
Installation
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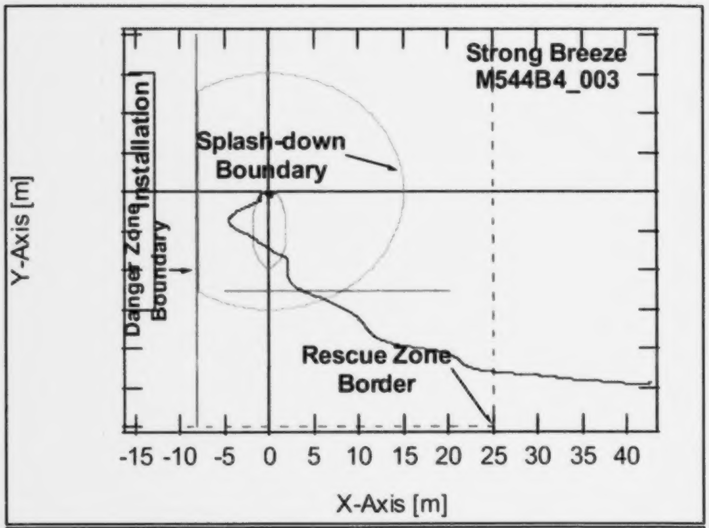
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Strong Breeze
M544B4_003
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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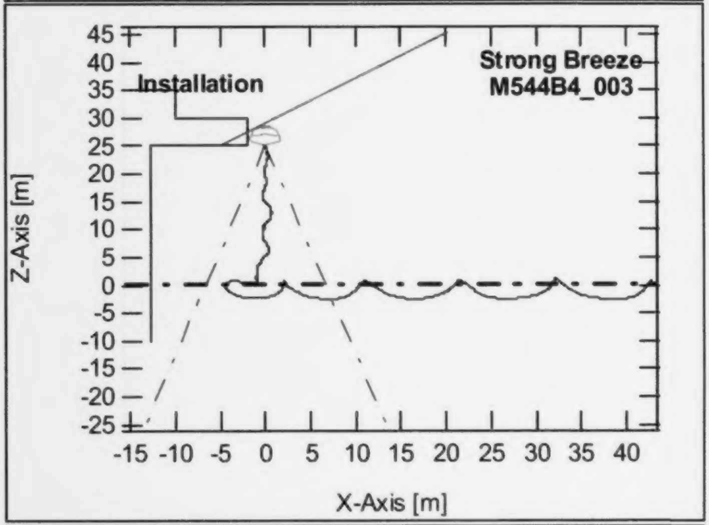
X-Axis [m]


Strong Breeze
M544B4_003
Installation
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Z-Axis [m]
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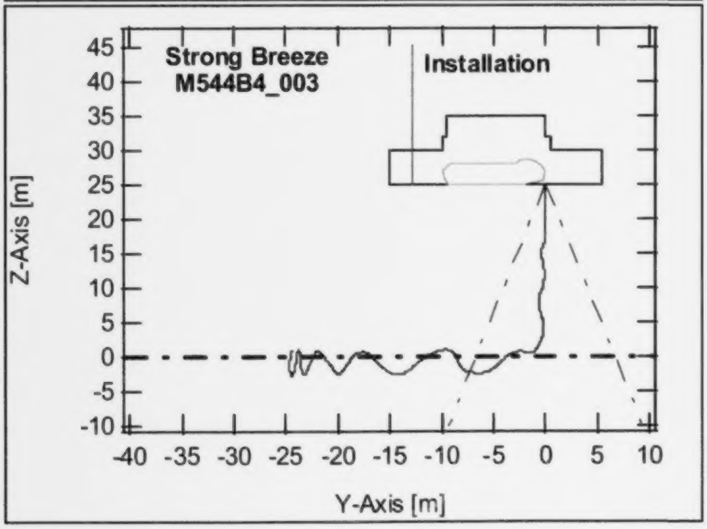
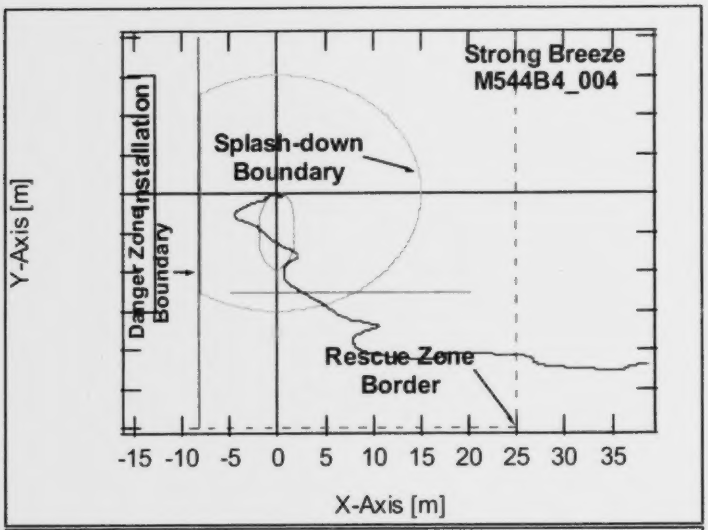
X-Axis [m]


Strong Breeze
M544B4_003
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Strong Breeze
M544B4_004
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15
-10
-5
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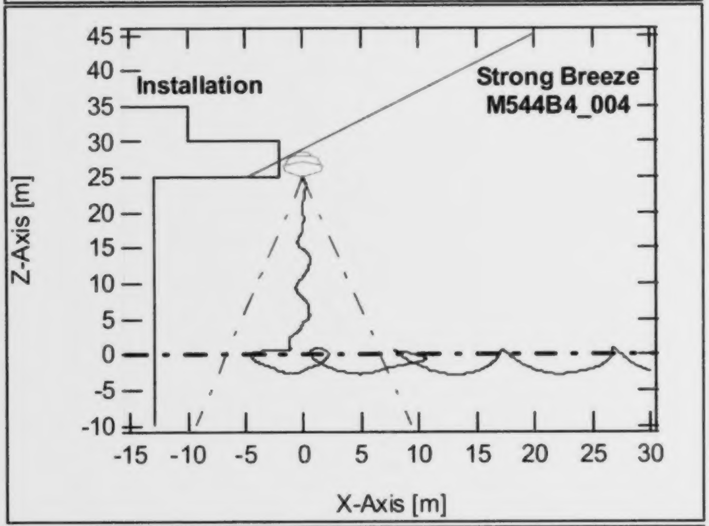
25
30
35
X-Axis [m]


Installation
Strong Breeze
M544B4_004
Z-Axis [m]
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35
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-10
-15
-10
-5
0
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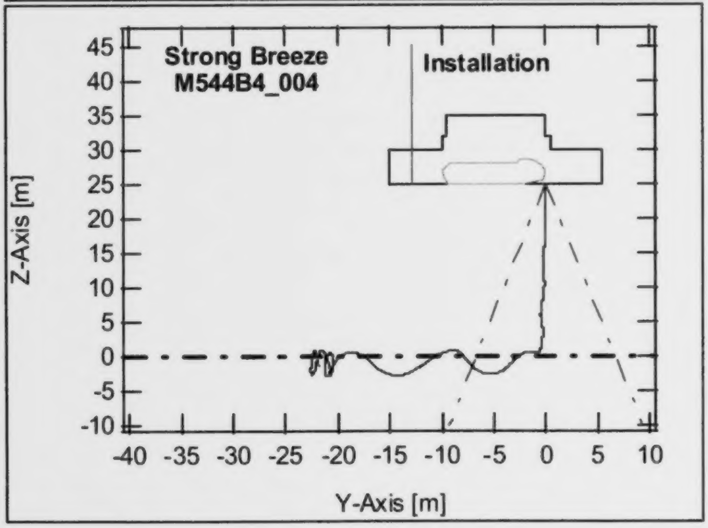
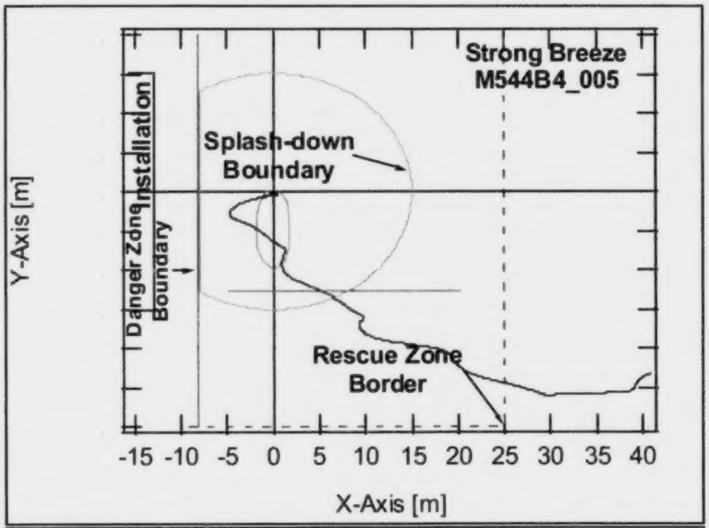
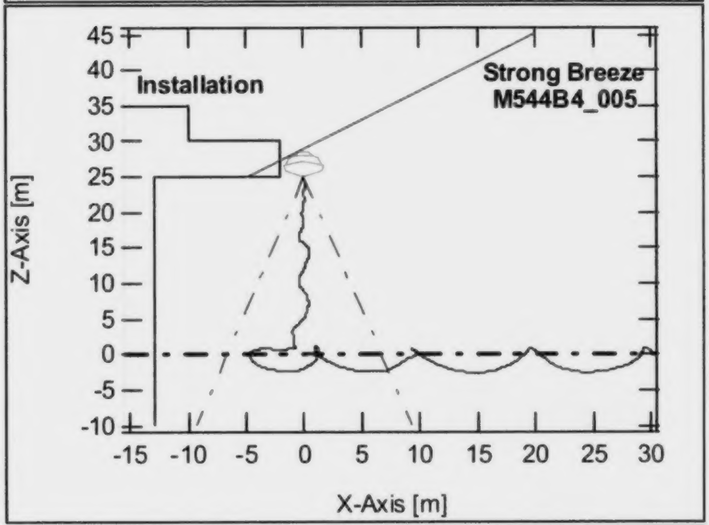
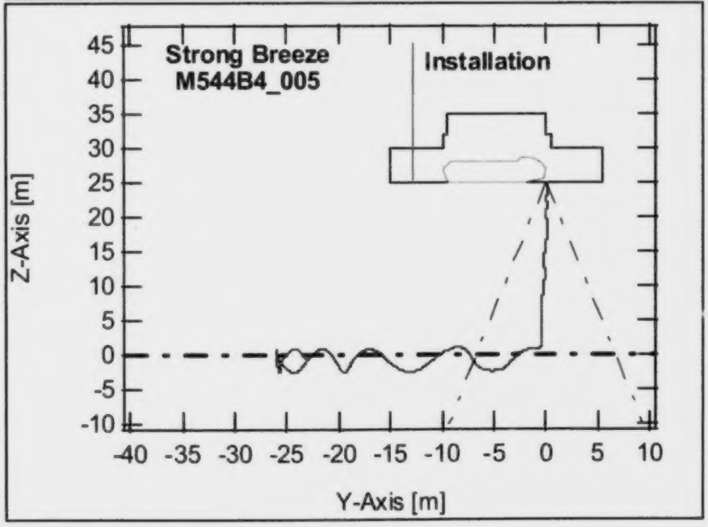
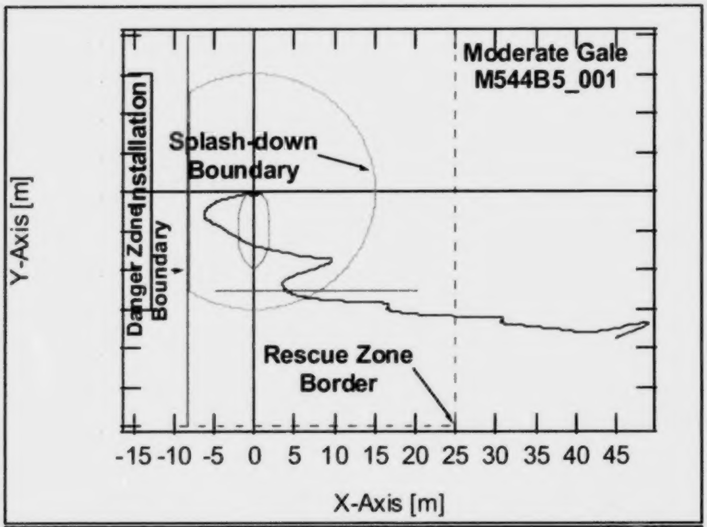
10
15
20
25
30
X-Axis [m]

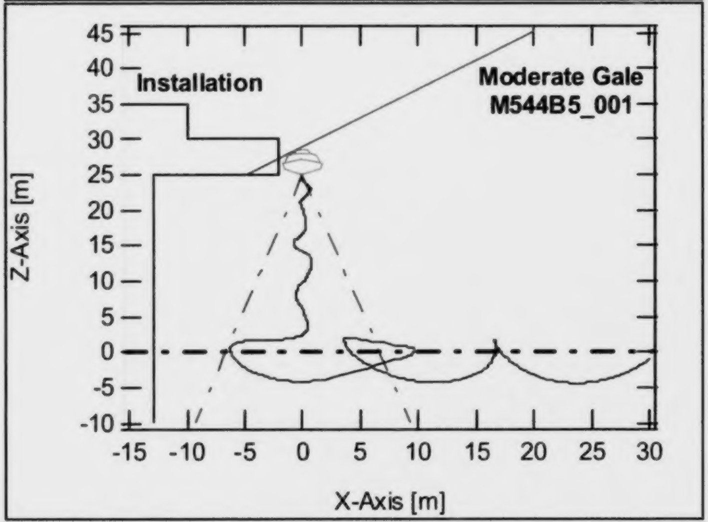

Strong Breeze
M544B4_004
Installation
Z-Axis [m]
45
40
35
30
25
20
15
10
5
0
-5
-10
-40
-35
-30
-25
-20
-15
-10
-5
0
5
10
Y-Axis [m]


Strong Breeze
M544B4_005
Installation
Danger Zone Boundary
Splash-down Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Installation
Strong Breeze
M544B4_005
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544B4_005
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Gale
M544B5_001
Installation
Danger Zone
Boundary
Splash-down
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40 45
X-Axis [m]


Installation
Moderate Gale
M544B5_001
Z-Axis [m]
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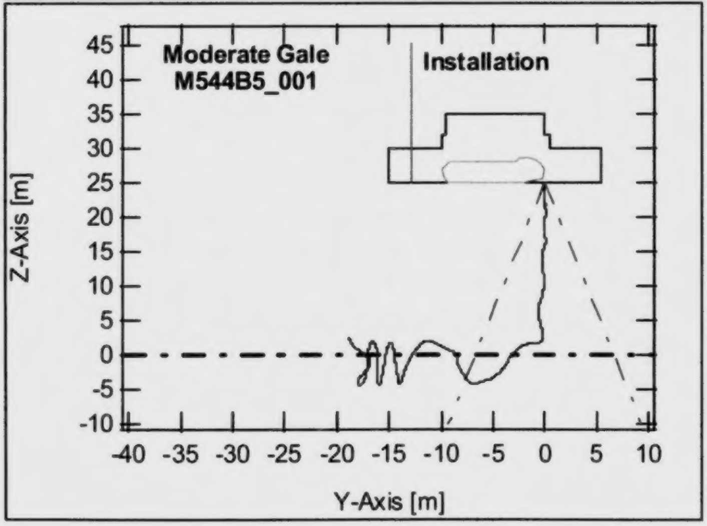
5
0
-5
-10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544B5_001
Installation
Z-Axis [m]
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40
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0
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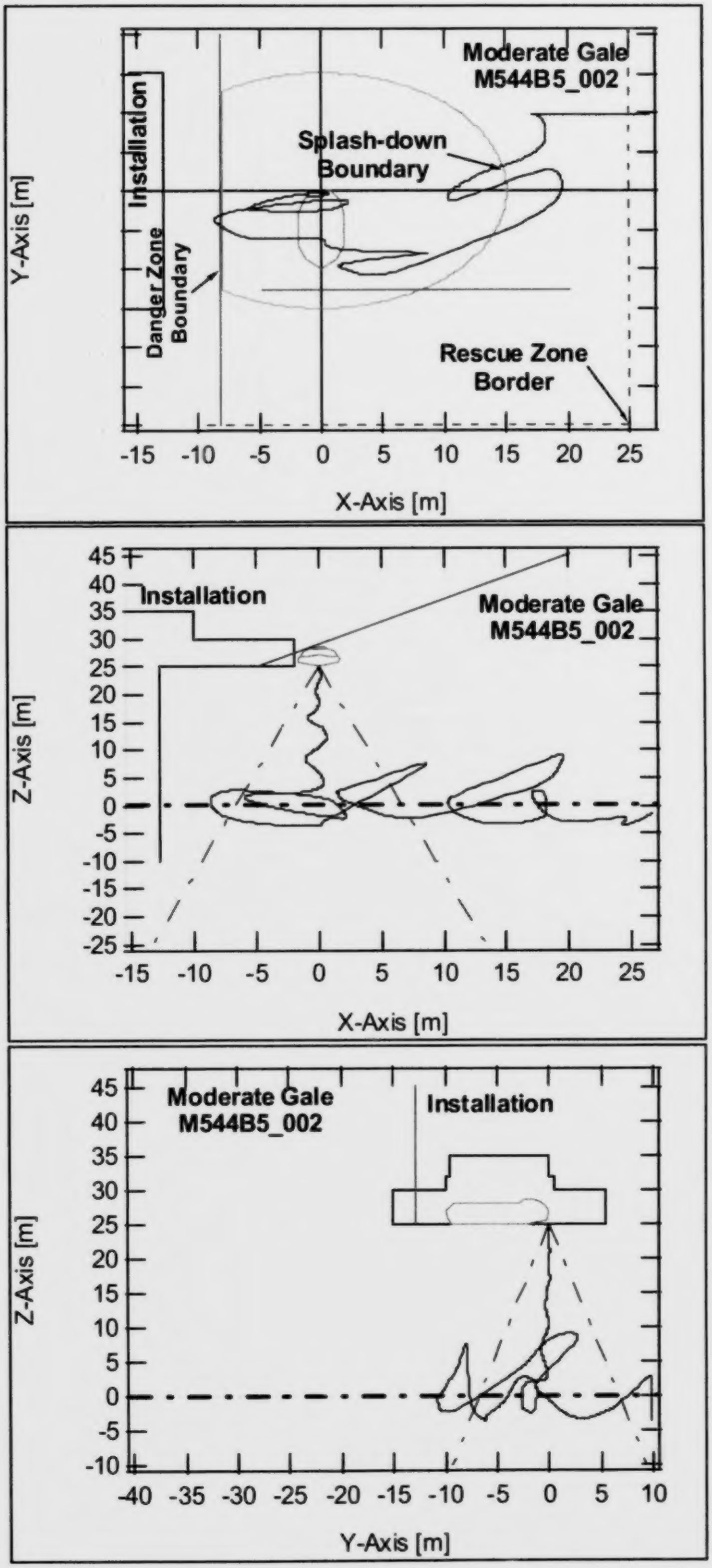
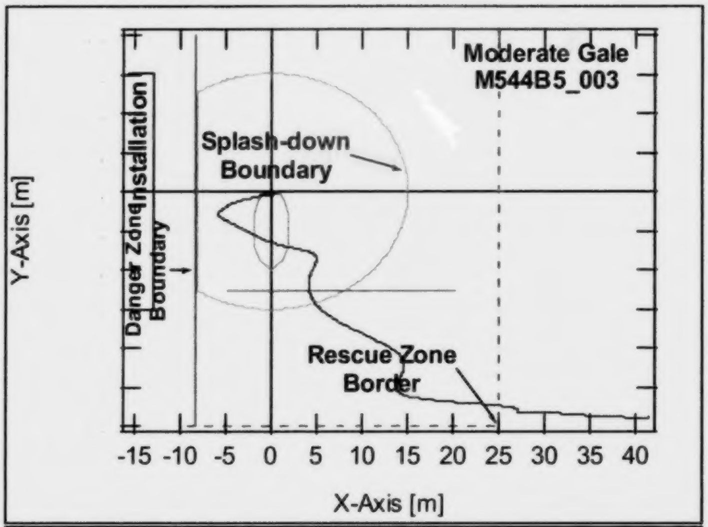
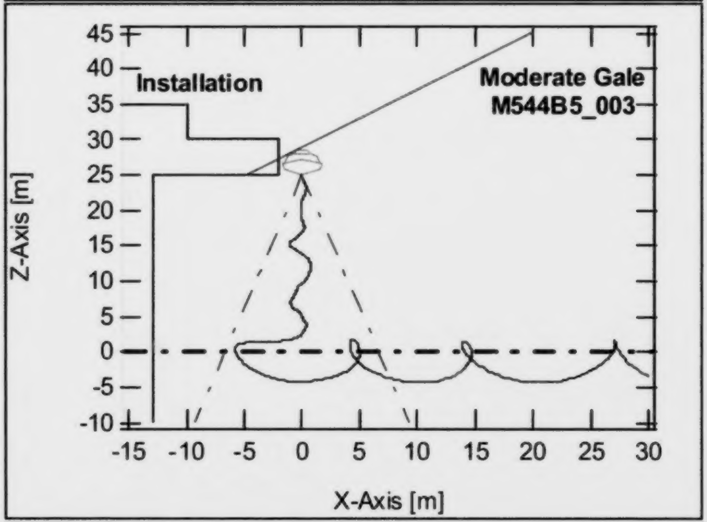
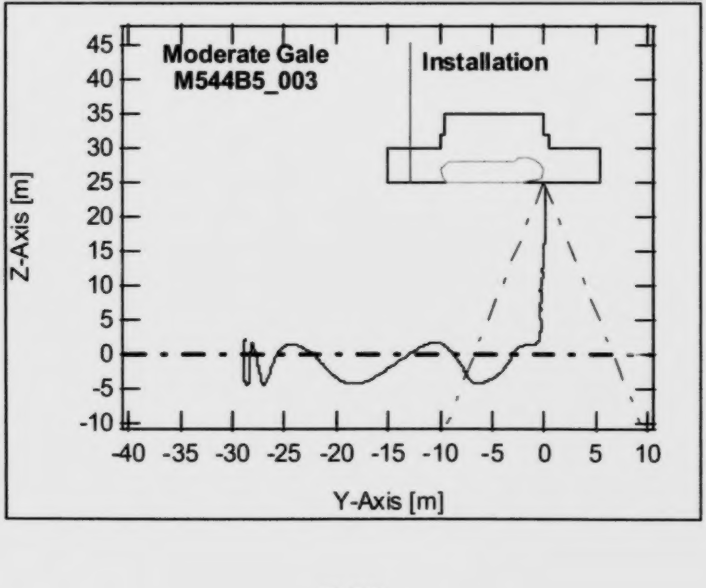
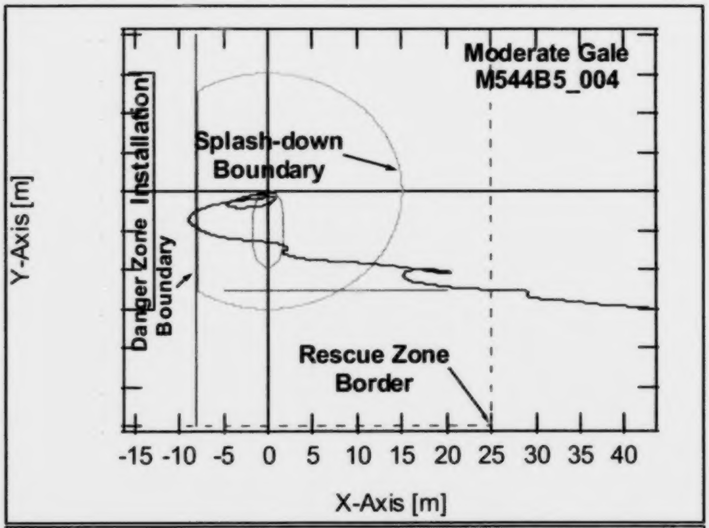
-10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]

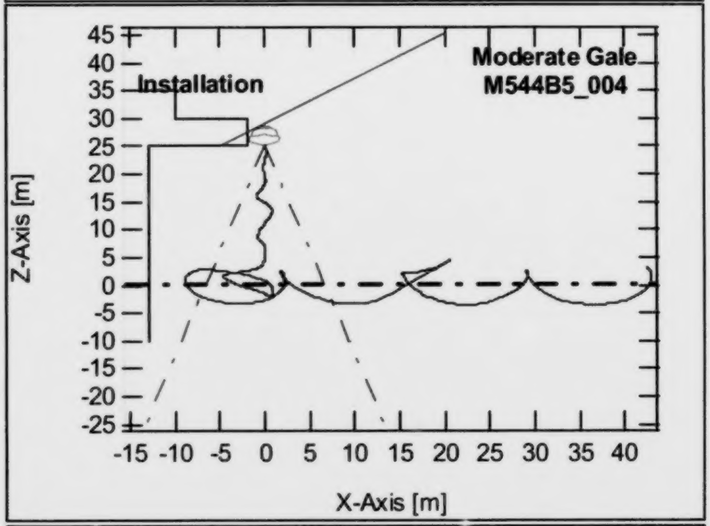

Moderate Gale
M544B5_002
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
-15
-10
-5
0
5
10
15
20
25
Z-Axis [m]
45
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
Y-Axis [m]
-40
-35
-30
-25
-20

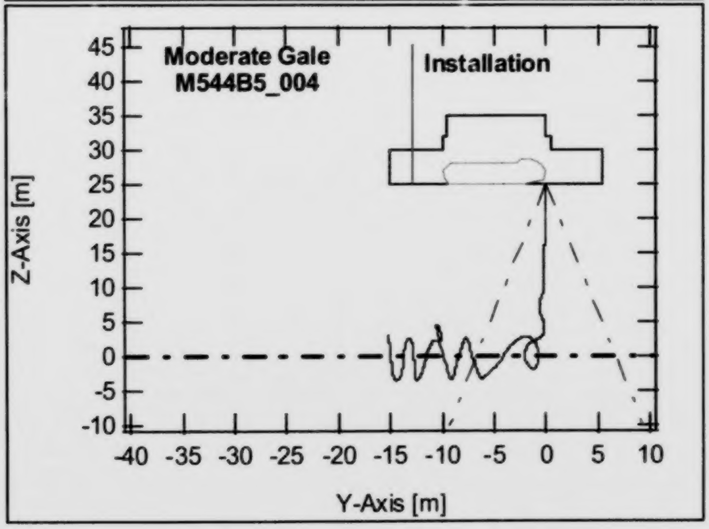

Moderate Gale
M544B5_003
Installation
Danger Zone
Boundary
Splash-down
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Installation
Moderate Gale
M544B5_003
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544B5_003
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Gale
M544B5_004
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
X-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40


Moderate Gale
M544B5_004
Installation
Z-Axis [m]
X-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25
-15 -10 -5 0 5 10 15 20 25 30 35 40


Moderate Gale
M544B5_004
Installation
Z-Axis [m]
Y-Axis [m]
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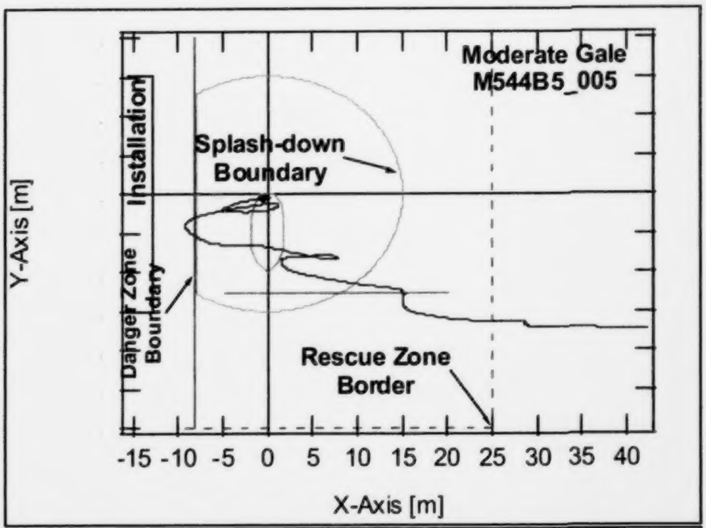
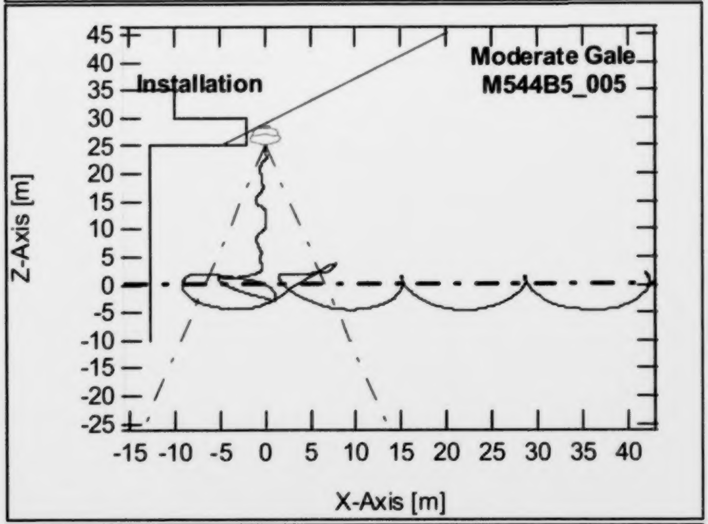
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10


Moderate Gale
M544B5_005
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Moderate Gale
M544B5_005
Installation
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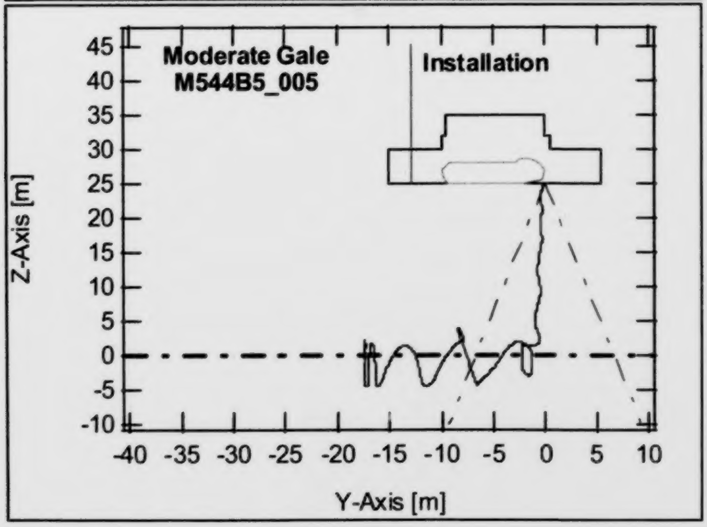
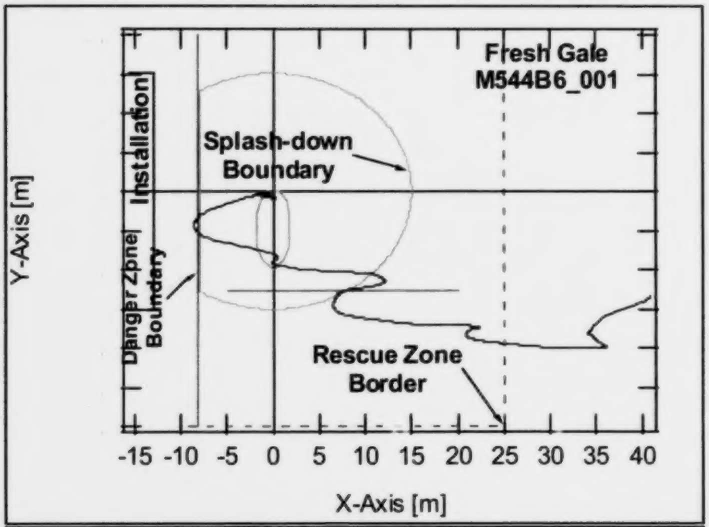
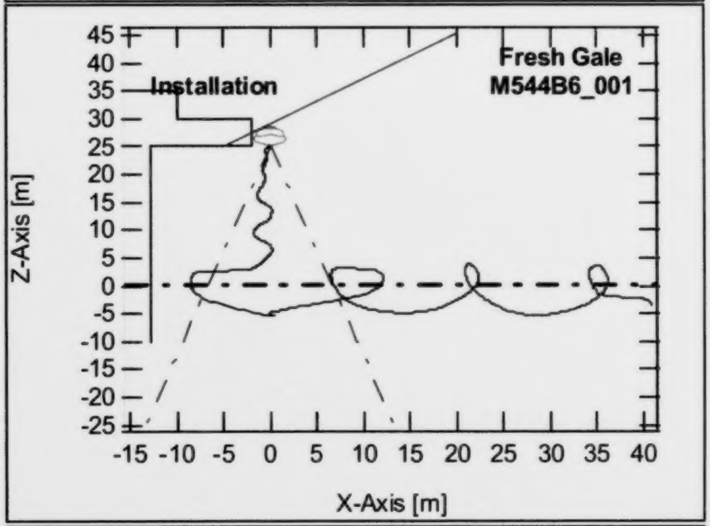
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Moderate Gale
M544B5_005
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Gale
M544B6_001
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


45
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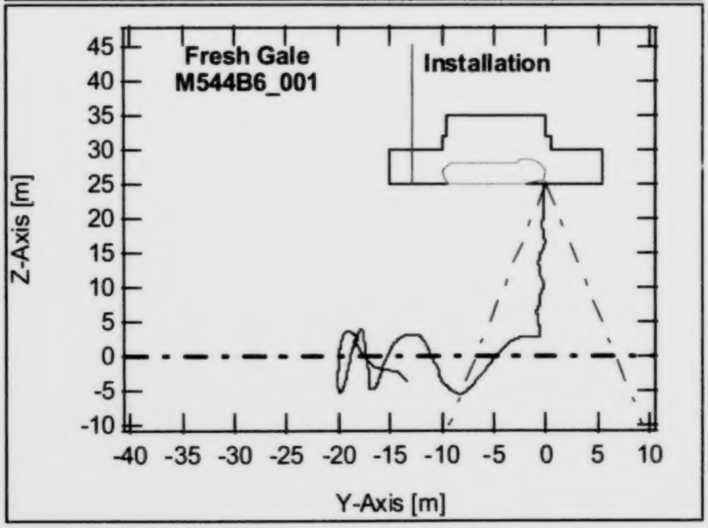
0
-5
-10
-15
-20
-25
Installation
Fresh Gale
M544B6_001
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]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0
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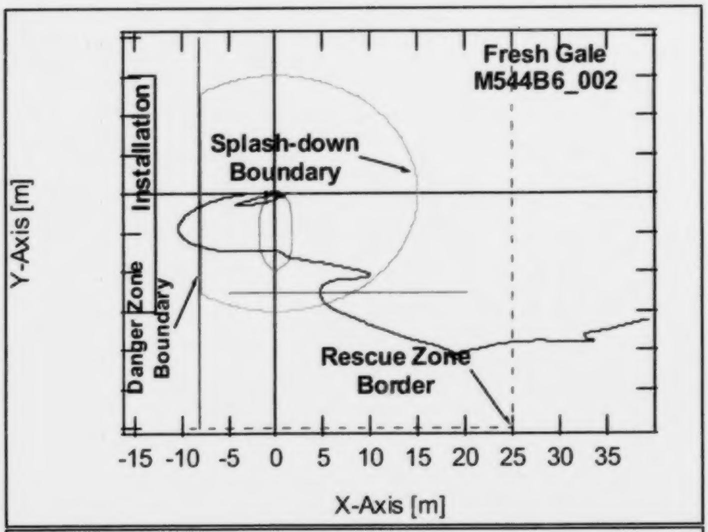
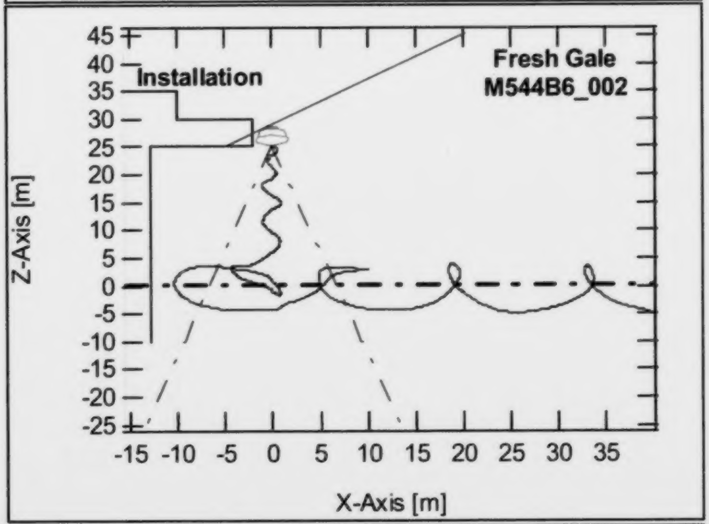
-10
Fresh Gale
M544B6_001
Installation
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Gale
M544B6_002
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35
X-Axis [m]


Fresh Gale
M544B6_002
Installation
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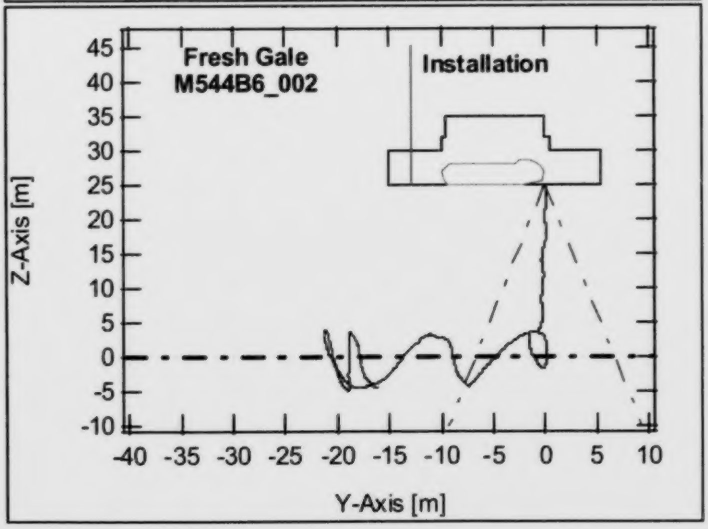
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35
X-Axis [m]


Fresh Gale
M544B6_002
Installation
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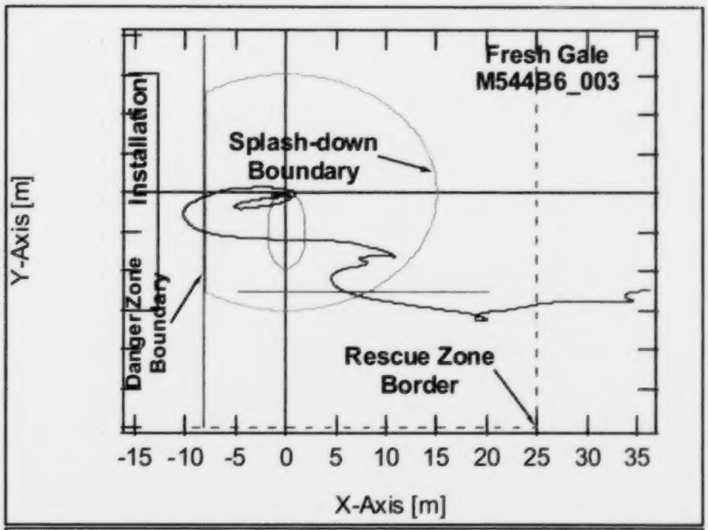
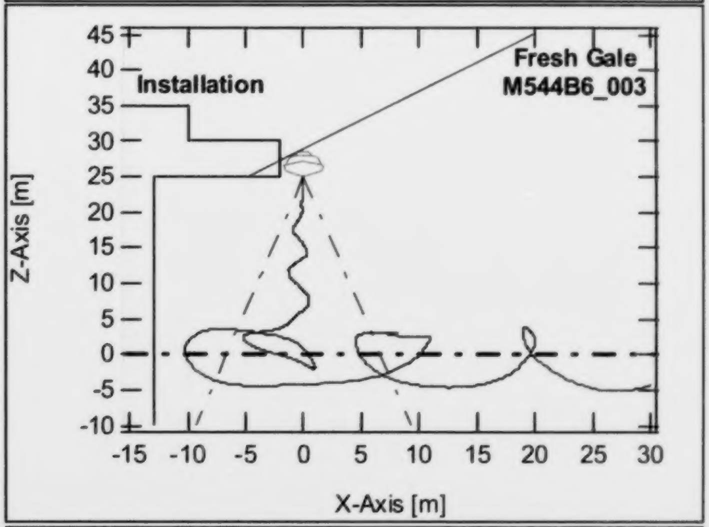
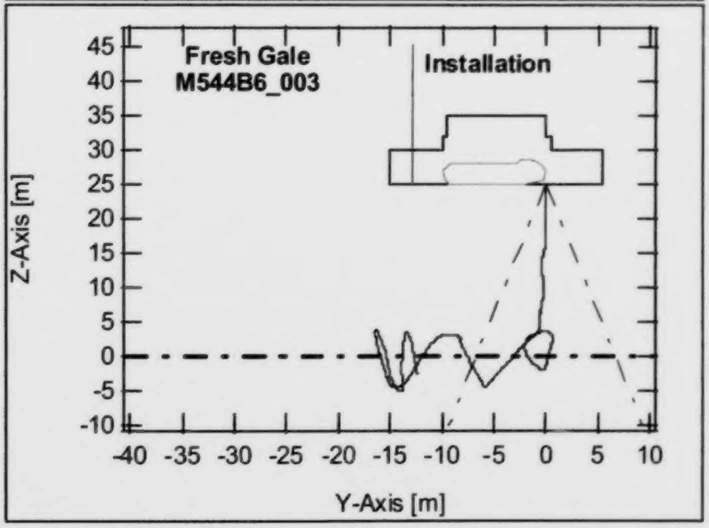
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Gale
M544B6_003
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35
X-Axis [m]


Fresh Gale
M544B6_003
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Fresh Gale
M544B6_003
Installation
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Z-Axis [m]
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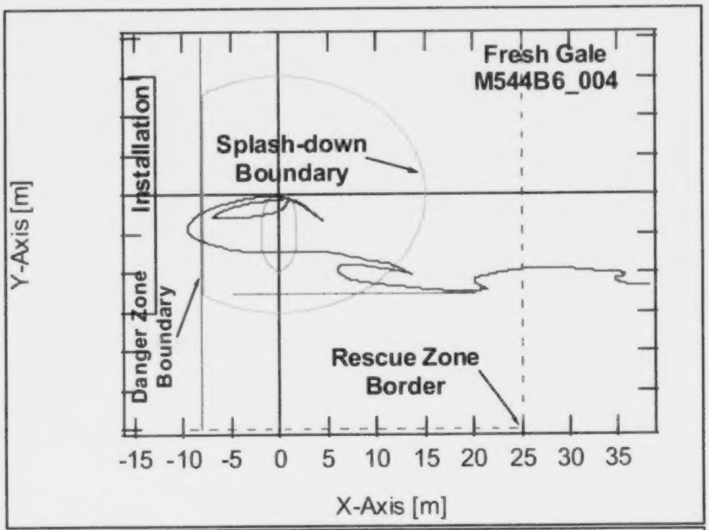
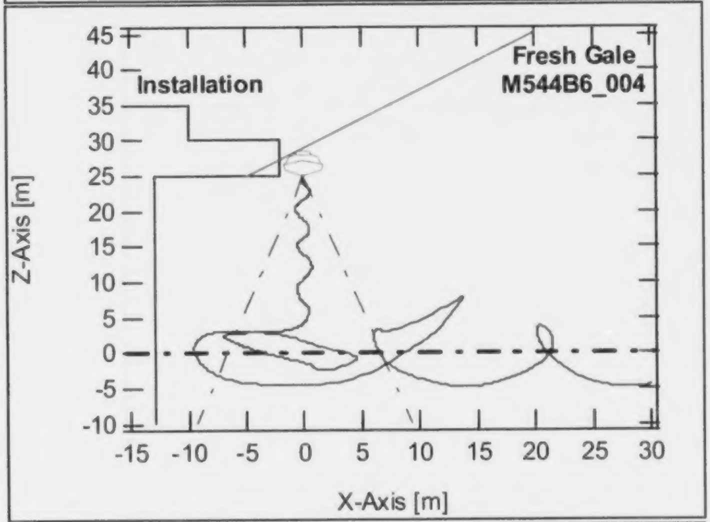
Y-Axis [m]


Fresh Gale
M544B6_004
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35
X-Axis [m]


Fresh Gale
M544B6_004
Installation
45
40
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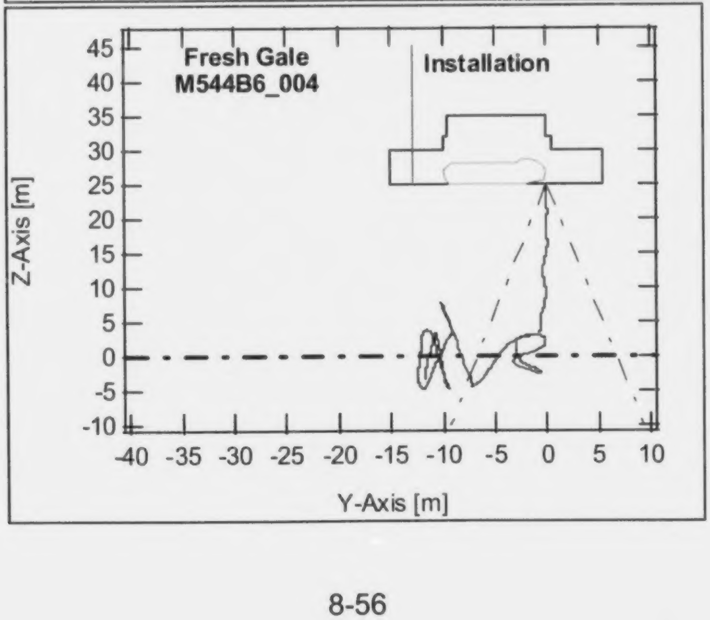
0
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Fresh Gale
M544B6_004
Installation
45
40
35
30
25
20
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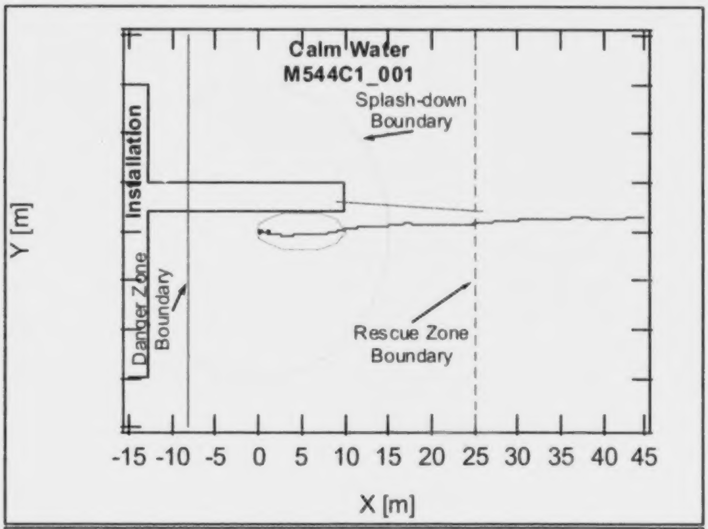
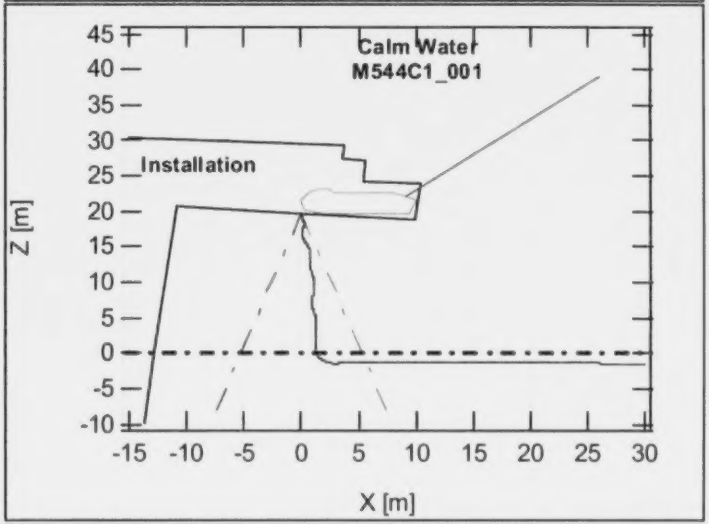
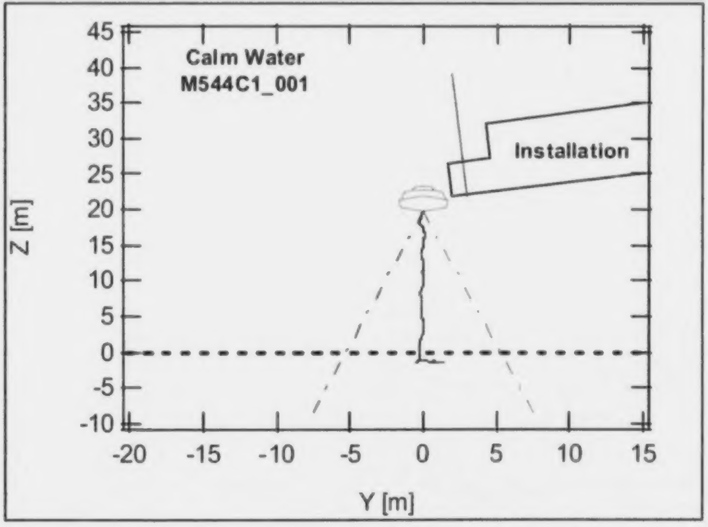
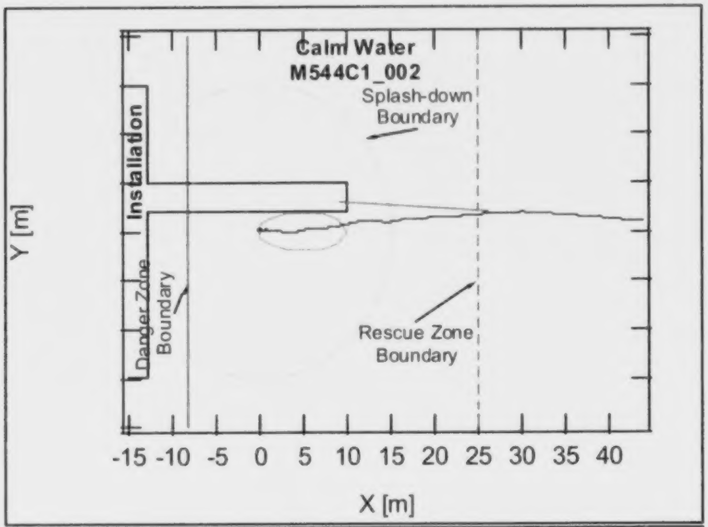
5
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544C1_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40 45
X [m]


Calm Water
M544C1_001
Installation
Z [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Calm Water
M544C1_001
Installation
Z [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-20 -15 -10 -5 0 5 10 15
Y [m]


Calm Water
M544C1_002
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15
-10
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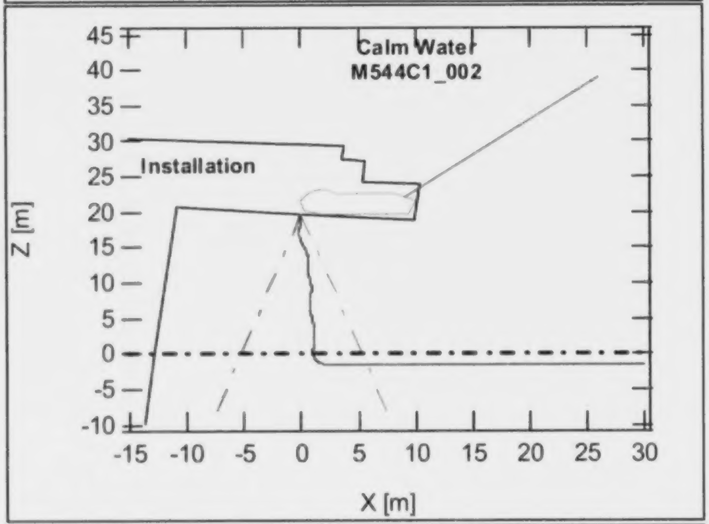
20
25
30
35
40
X [m]


Calm Water
M544C1_002
Installation
Z [m]
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35
30
25
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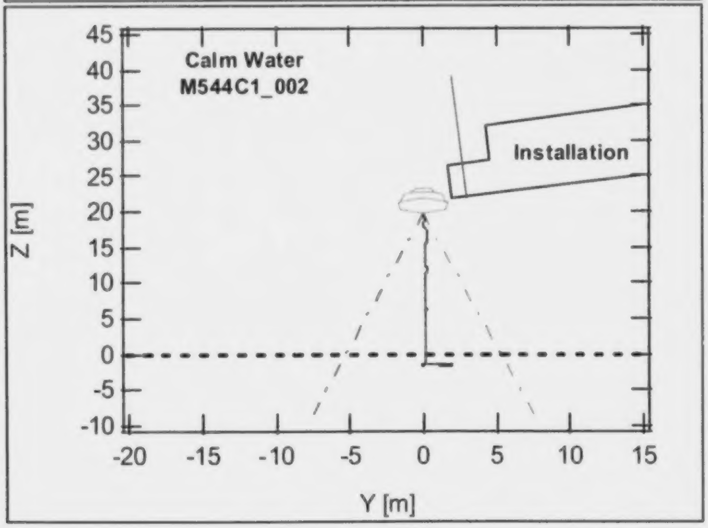
25
30
X [m]


Calm Water
M544C1_002
Installation
Z [m]
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0
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10
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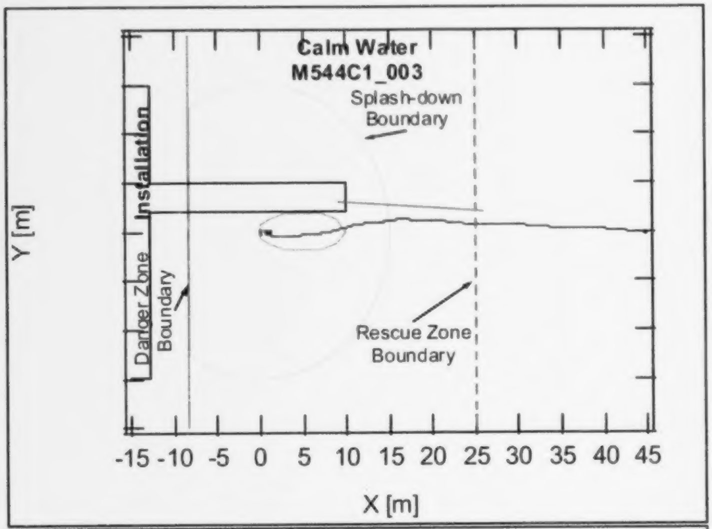
Y [m]


Calm Water
M544C1_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15
-10
-5
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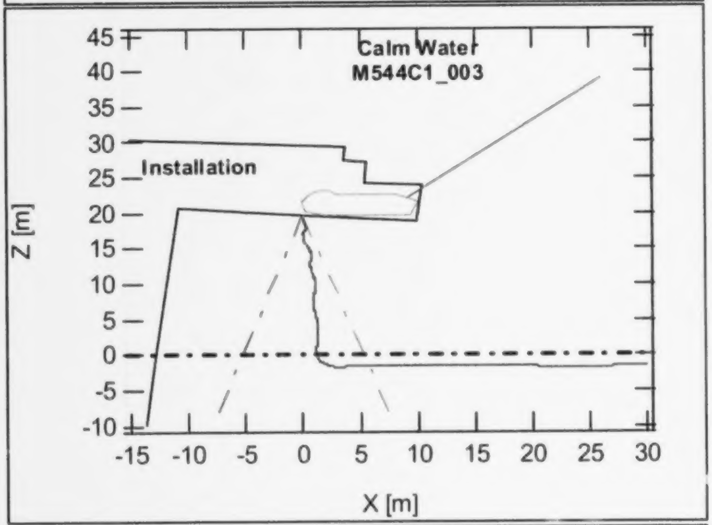
25
30
35
40
45
X [m]


Calm Water
M544C1_003
Installation
45
40
35
30
25
20
15
10
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-10
Z [m]
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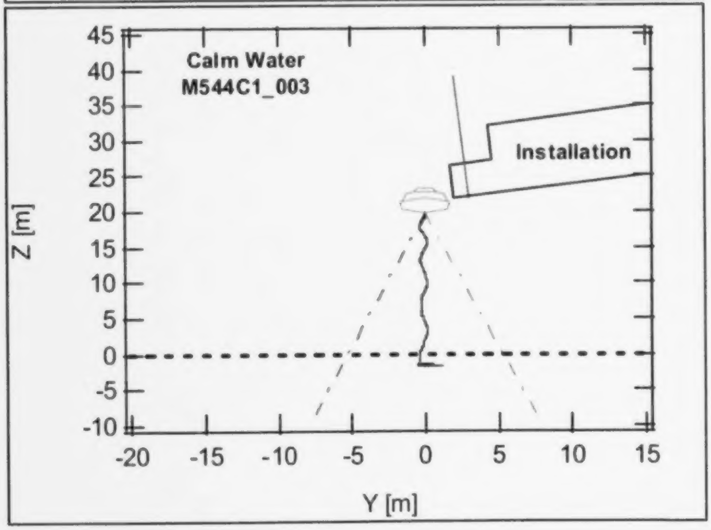
10
15
20
25
30
X [m]


Calm Water
M544C1_003
Installation
45
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25
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-5
-10
Z [m]
-20
-15
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-5
0
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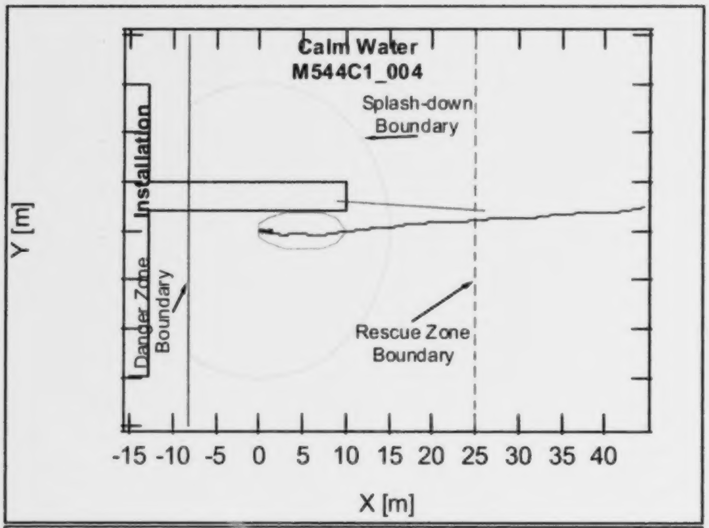
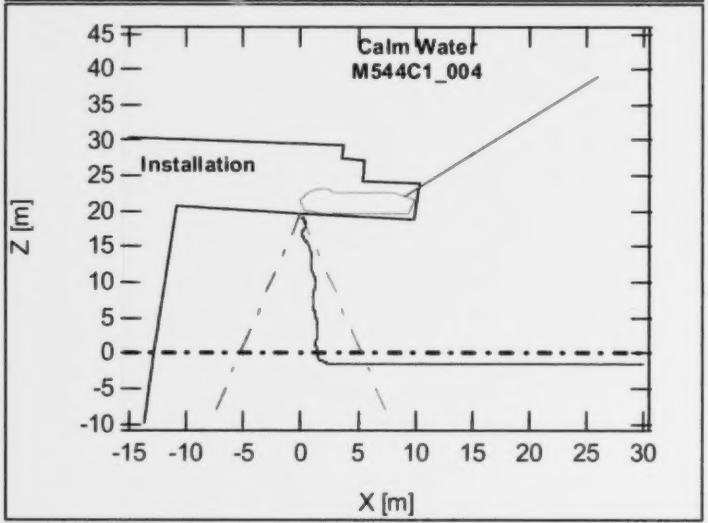
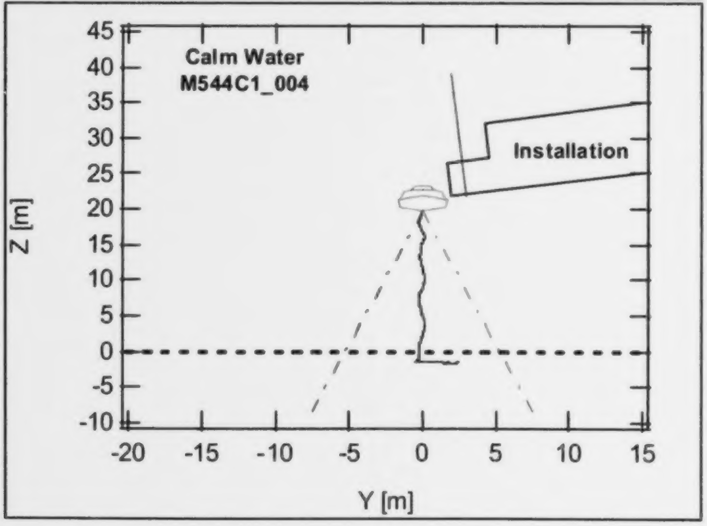
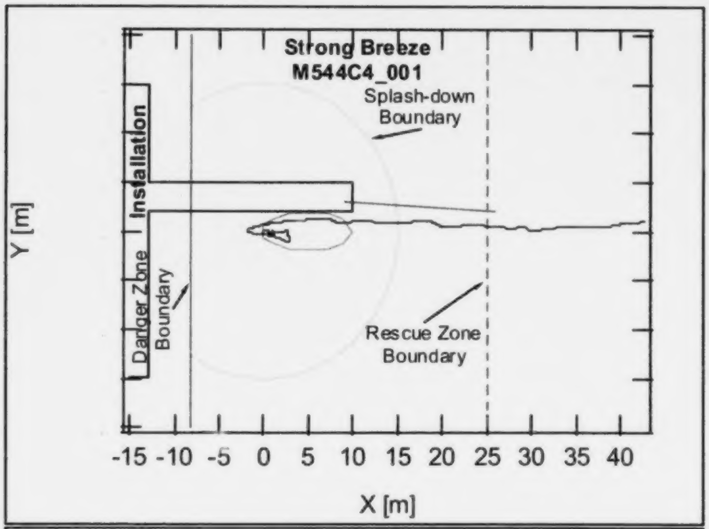
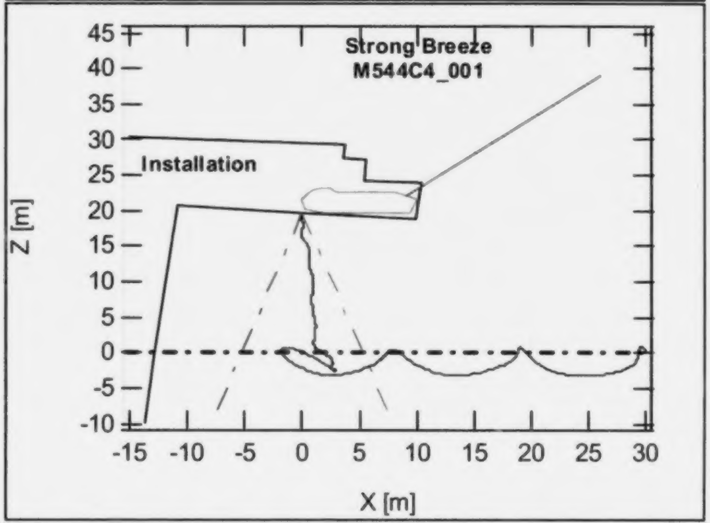
10
15
Y [m]


Calm Water
M544C1_004
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Calm Water
M544C1_004
Installation
45
40
35
30
25
20
15
10
5
0
-5
-10
Z [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Calm Water
M544C1_004
Installation
45
40
35
30
25
20
15
10
5
0
-5
-10
Z [m]
-20 -15 -10 -5 0 5 10 15
Y [m]


Strong Breeze
M544C4_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15
-10
-5
0
5
10
15
20
25
30
35
40
X [m]


Strong Breeze
M544C4_001
Installation
Z [m]
45
40
35
30
25
20
15
10
5
0
-5
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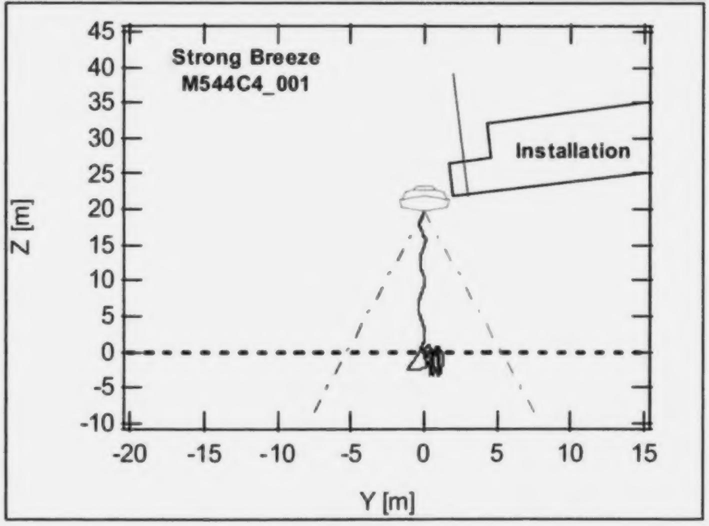
10
15
20
25
30
X [m]


Strong Breeze
M544C4_001
Installation
Z [m]
45
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-15
-10
-5
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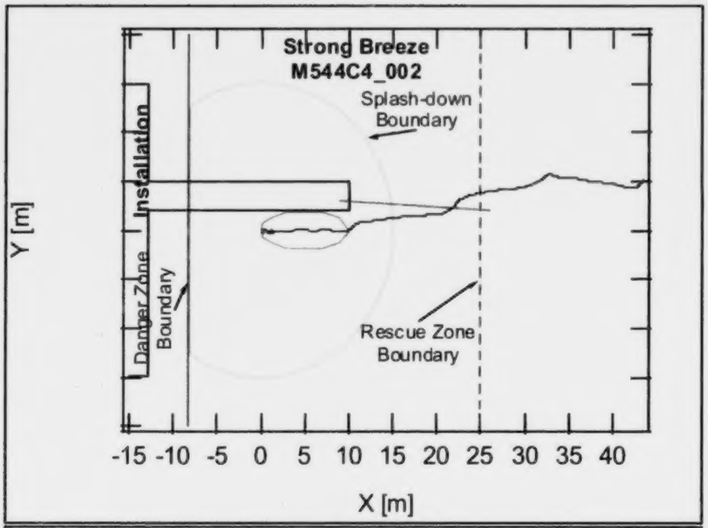
Y [m]


Strong Breeze
M544C4_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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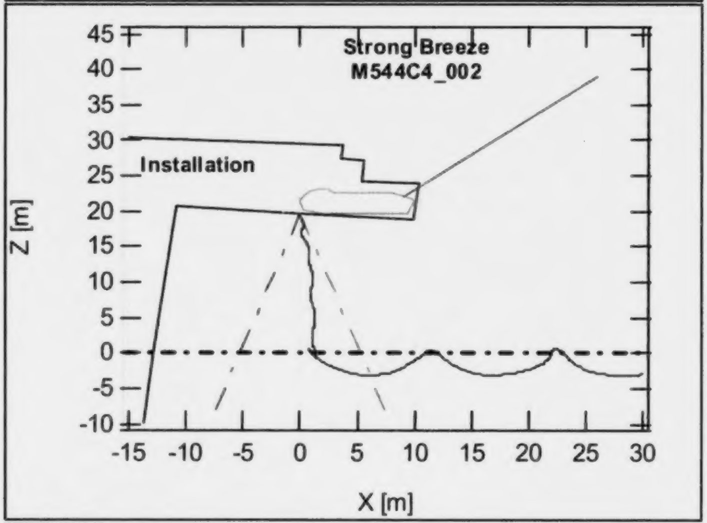
X [m]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M544C4_002
Installation
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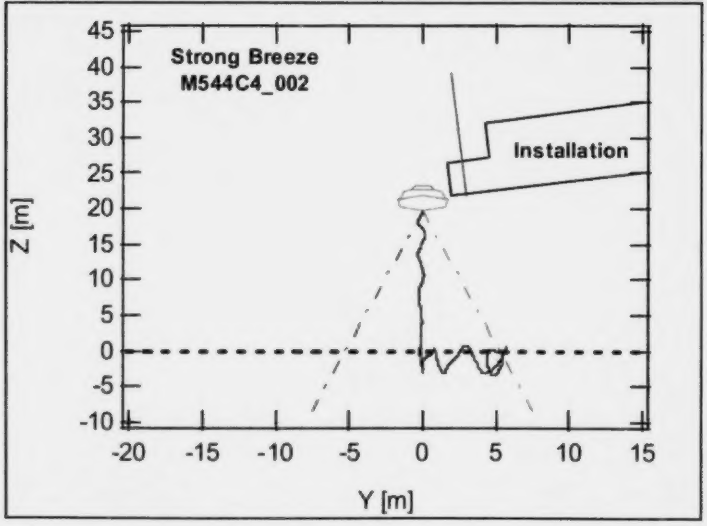
X [m]


Strong Breeze
M544C4_002
Installation
Z [m]
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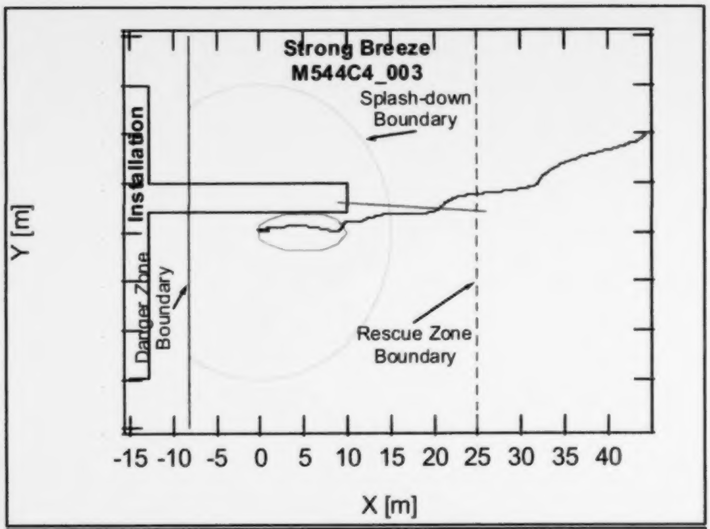
Y [m]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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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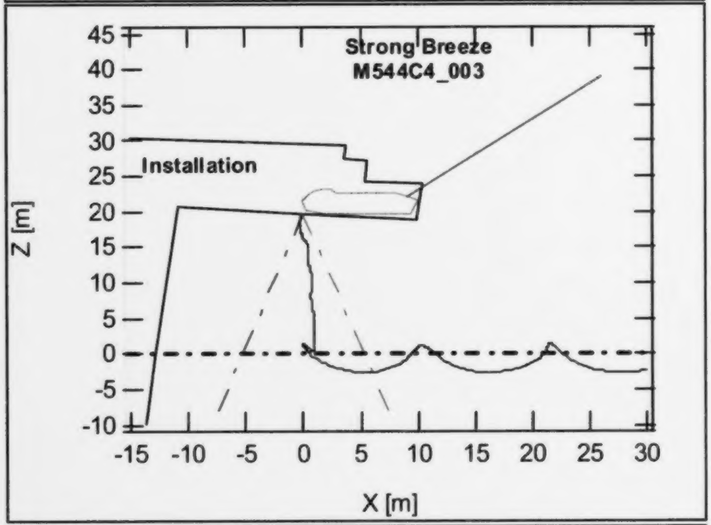
X [m]


Strong Breeze
M544C4_003
Installation
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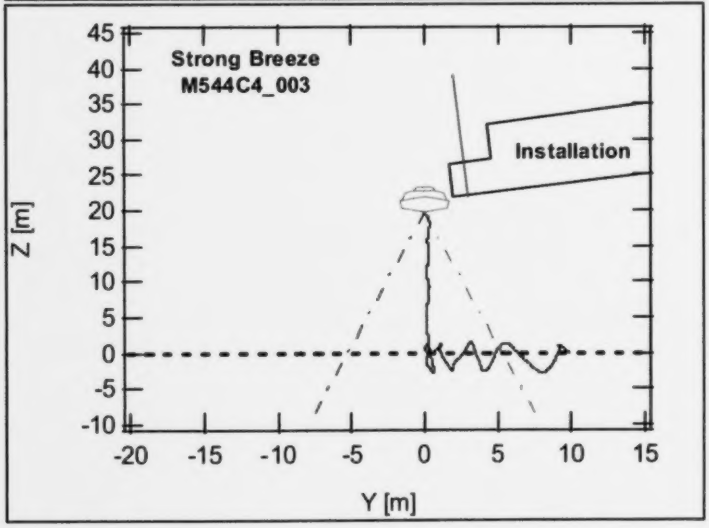
X [m]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Installation
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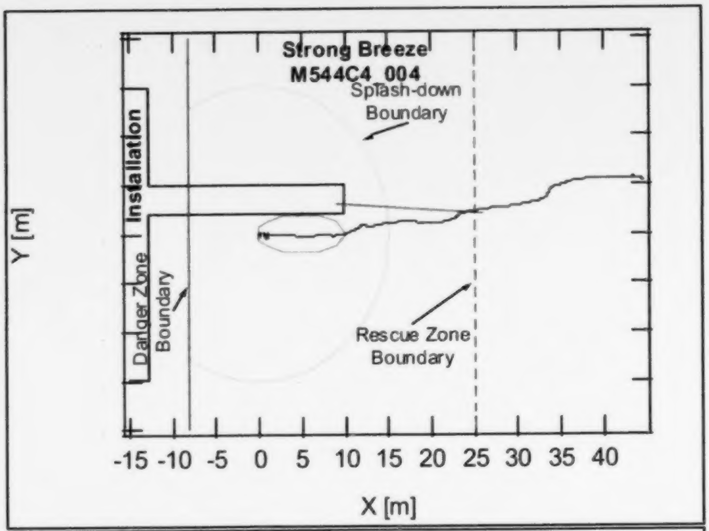
Y [m]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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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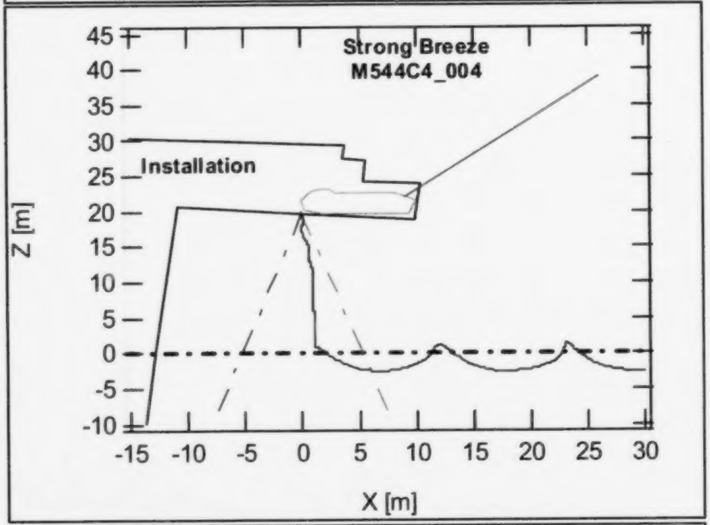
X [m]


Strong Breeze
M544C4_004
Installation
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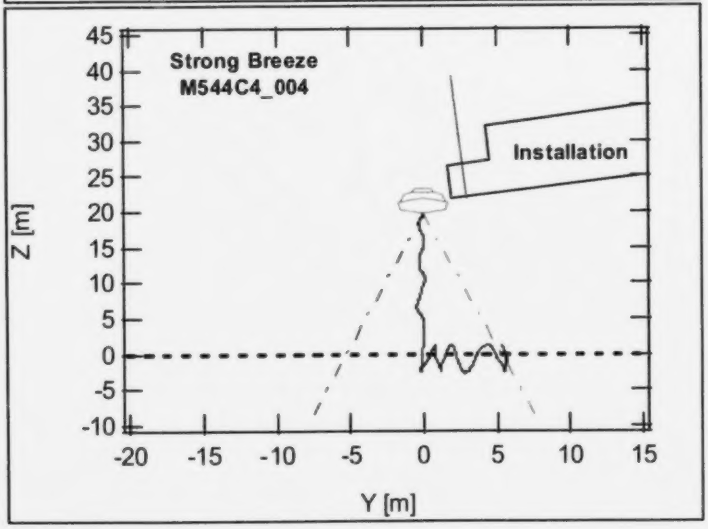
X [m]


Strong Breeze
M544C4_004
Installation
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Z [m]
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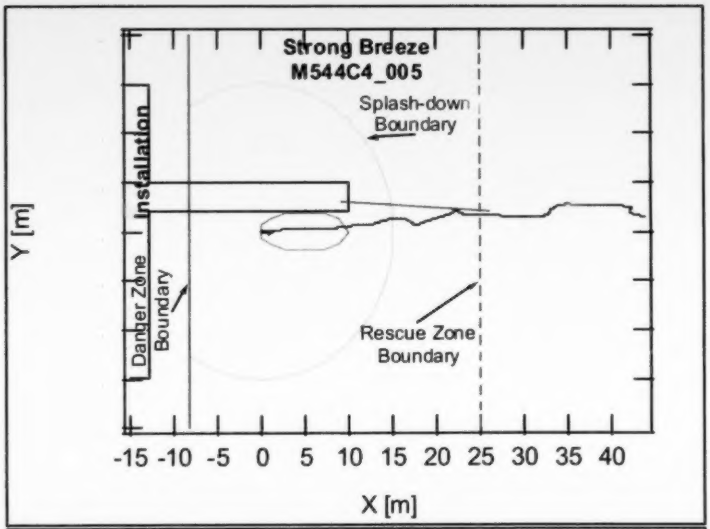
Y [m]


Strong Breeze
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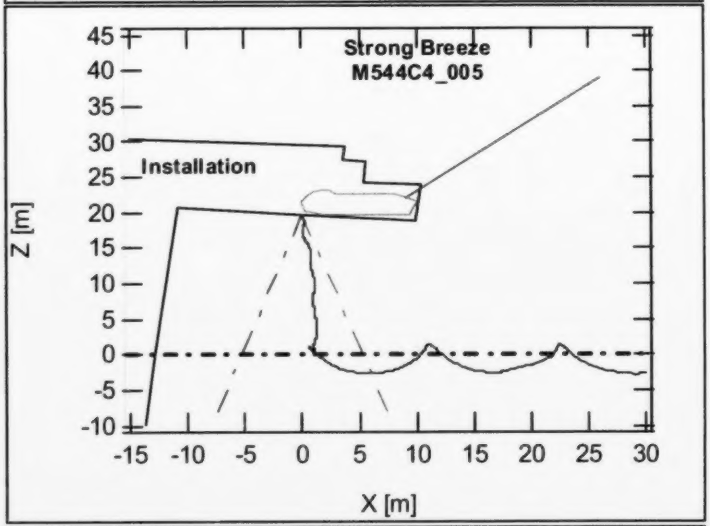
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]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M544C4_005
Installation
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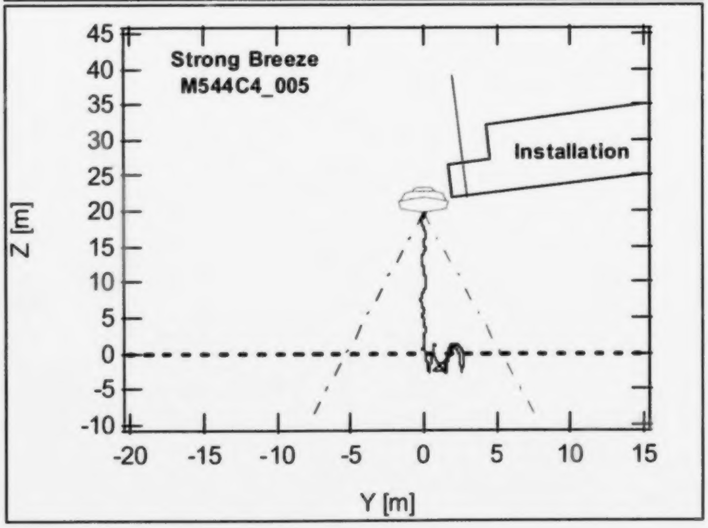
-15 -10 -5 0 5 10 15 20 25 30
X [m]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Installation
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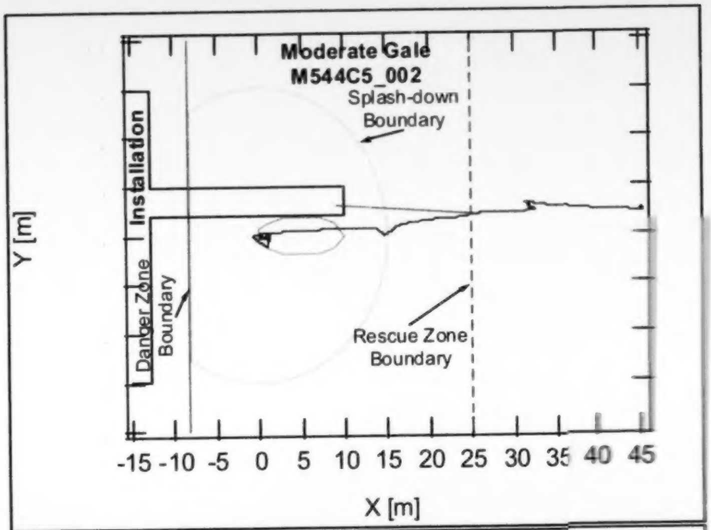
Y [m]


Moderate Gale
M544C5_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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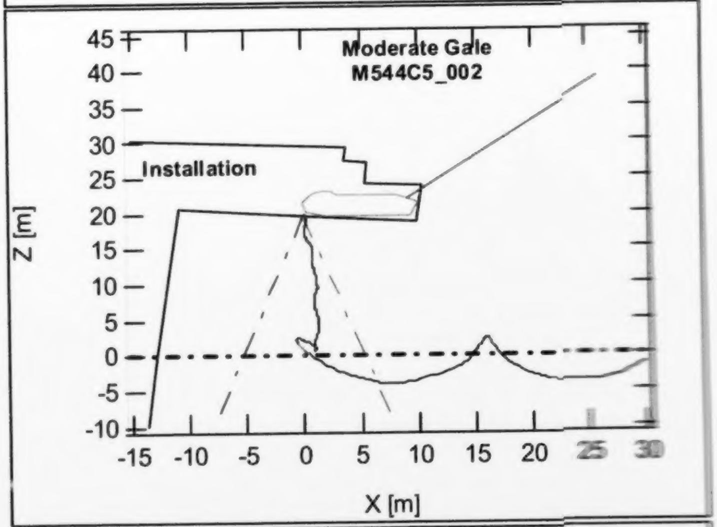
X [m]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Installation
Z [m]
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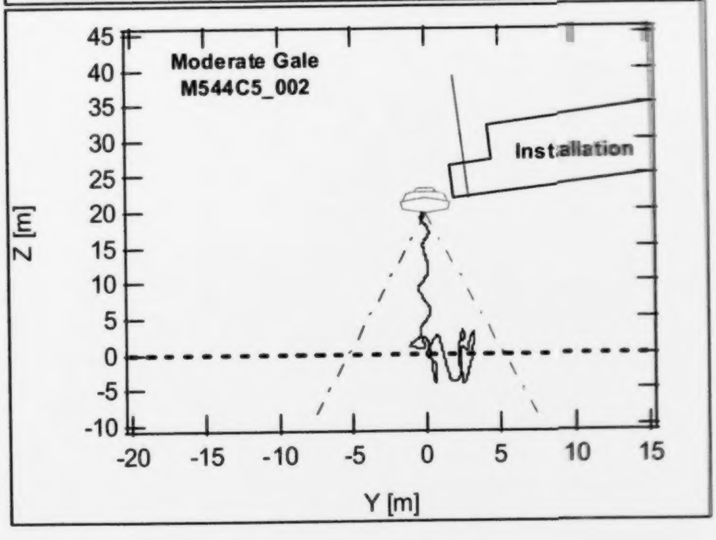
-15 -10 -5 0 5 10 15 20 25 30
X [m]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Installation
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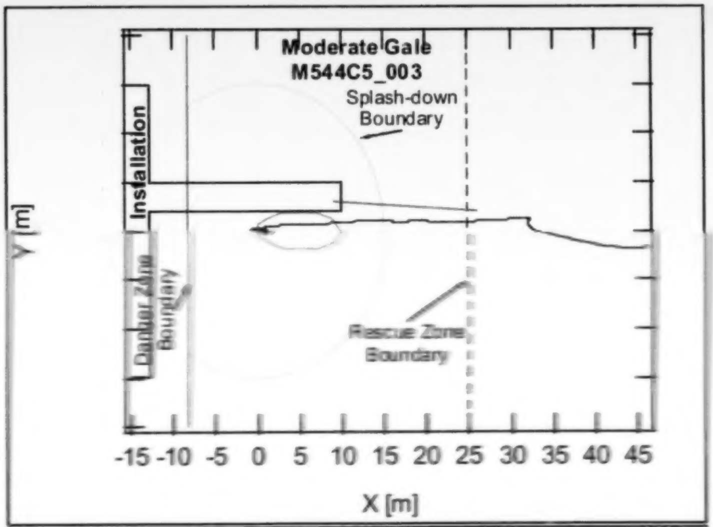
-20 -15 -10 -5 0 5 10 15
Y [m]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M544C5_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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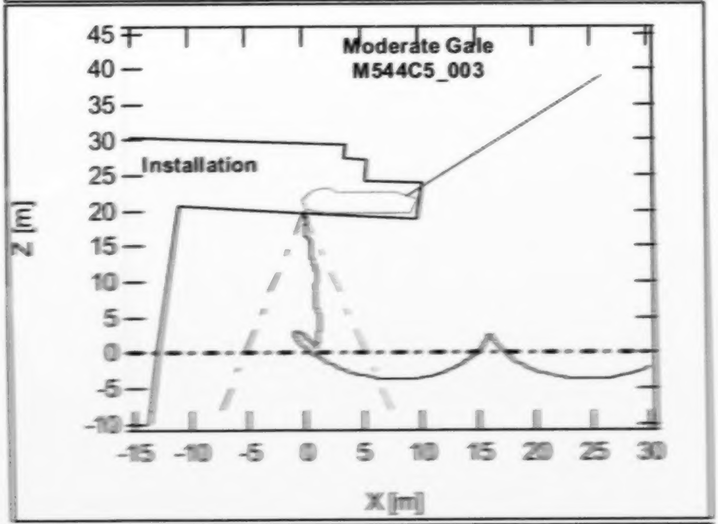
X [m]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M544C5_003
Installation
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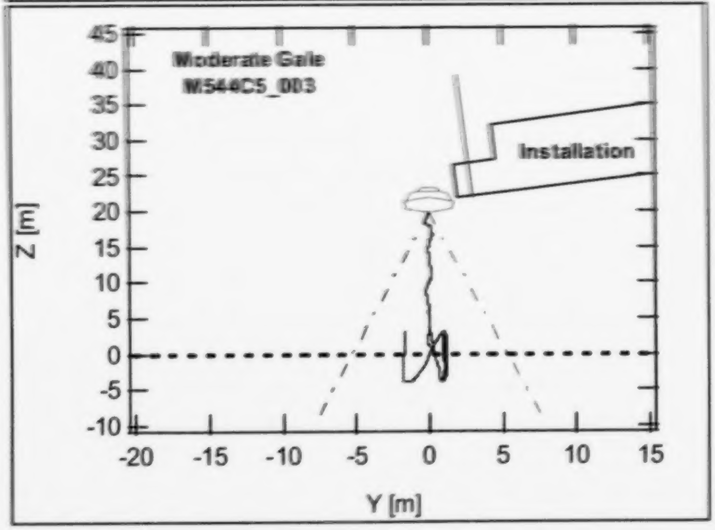
X [m]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M544C5_003
Installation
Z [m]
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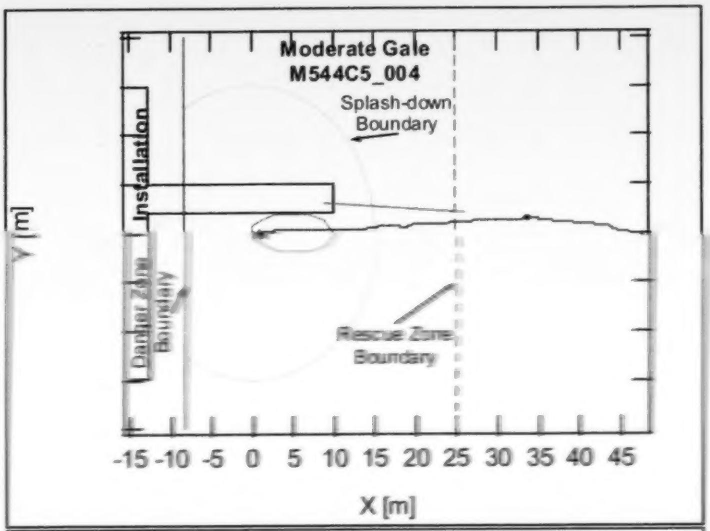
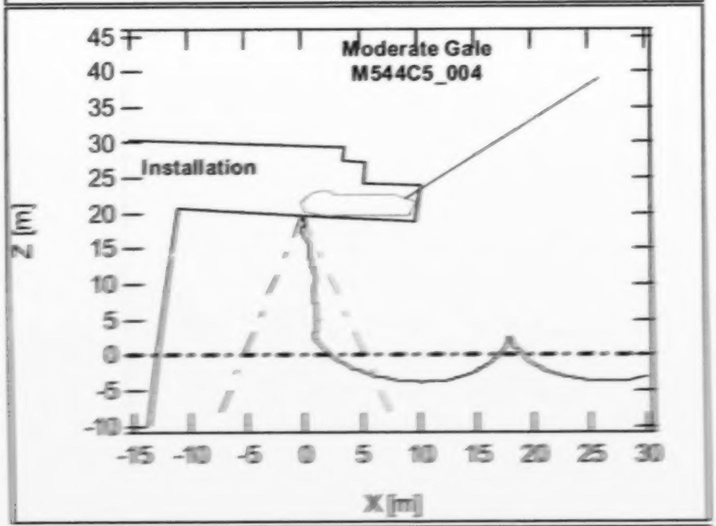
Y [m]



Moderate Gale
M544C5_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40 45
X [m]



Moderate Gale
M544C5_004
Installation
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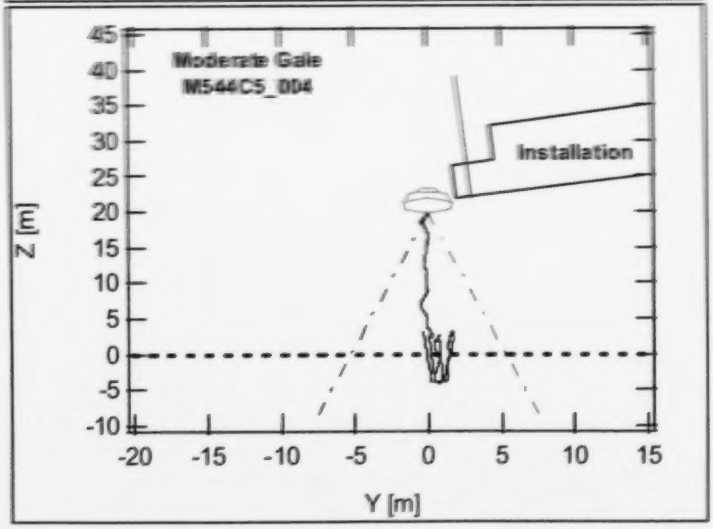
X [m]



Moderate Gale
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Installation
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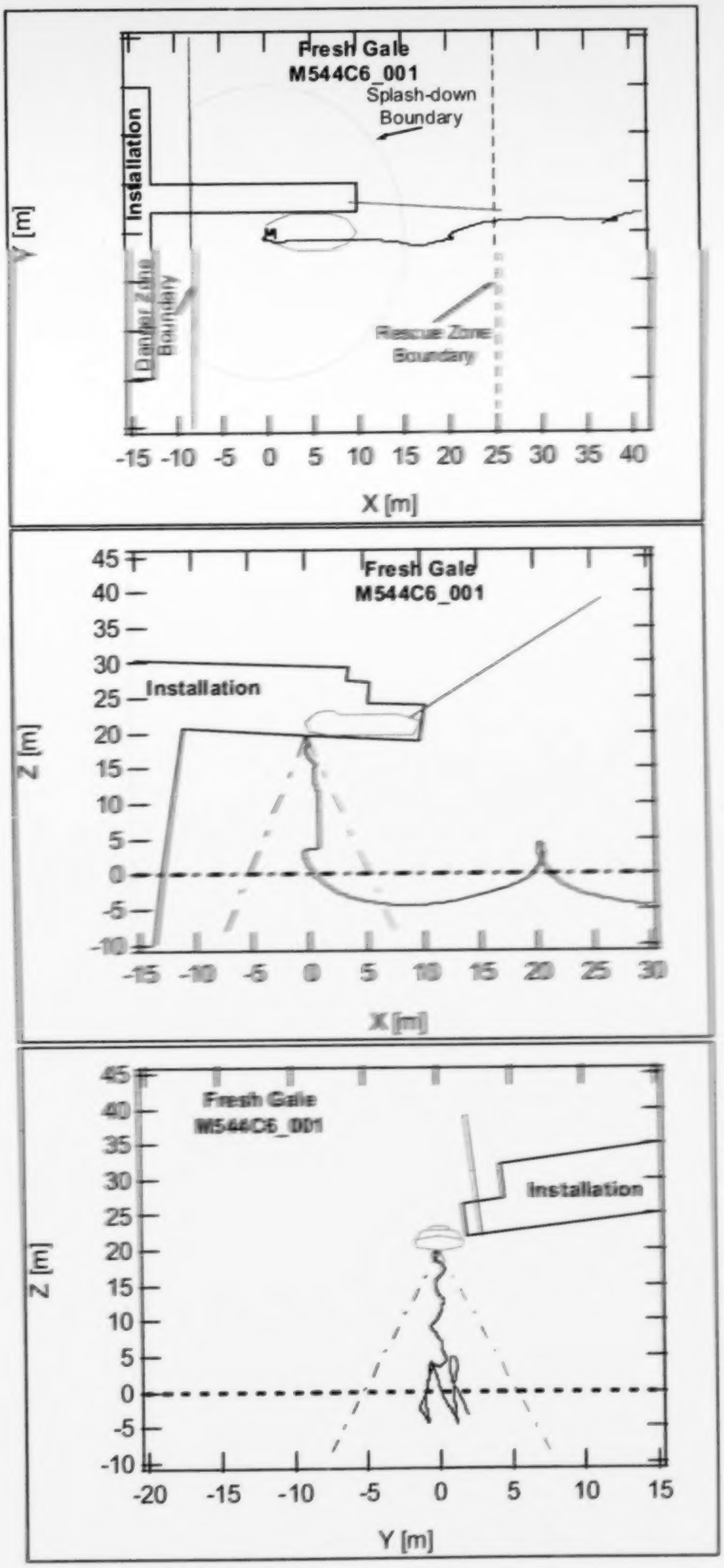
Y [m]


Fresh Gale
M544C6_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]
Fresh Gale
M544C6_001
Installation
Z [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X [m]
Fresh Gale
M544C6_001
Installation
Z [m]
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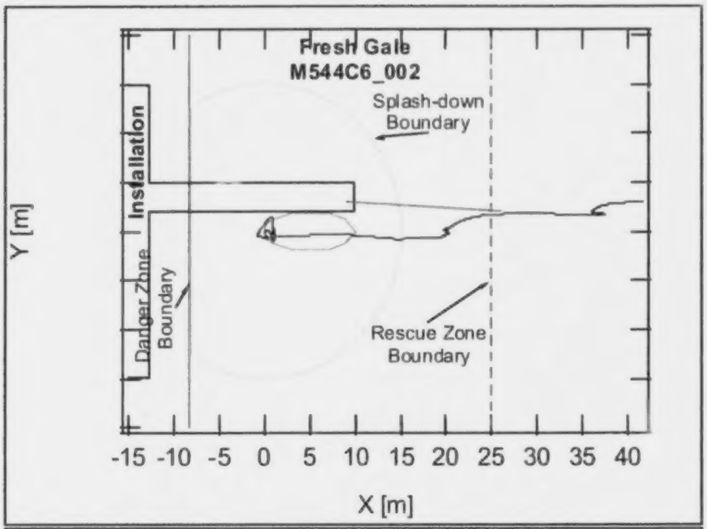
Y [m]


Fresh Gale
M544C6_002
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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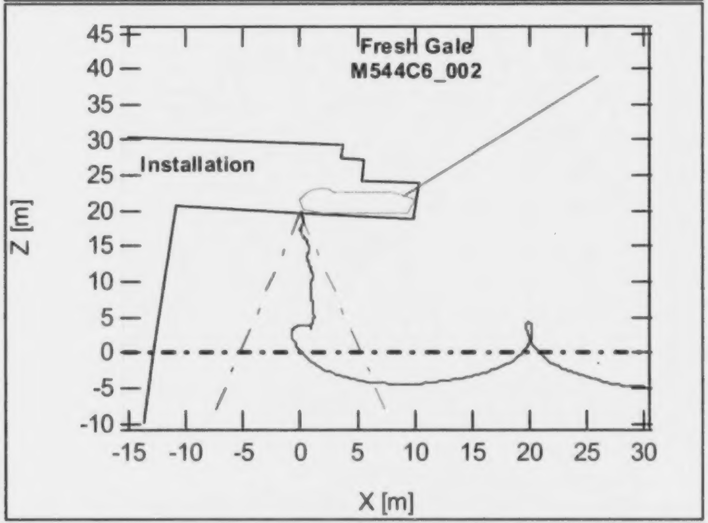
X [m]


Fresh Gale
M544C6_002
Installation
Z [m]
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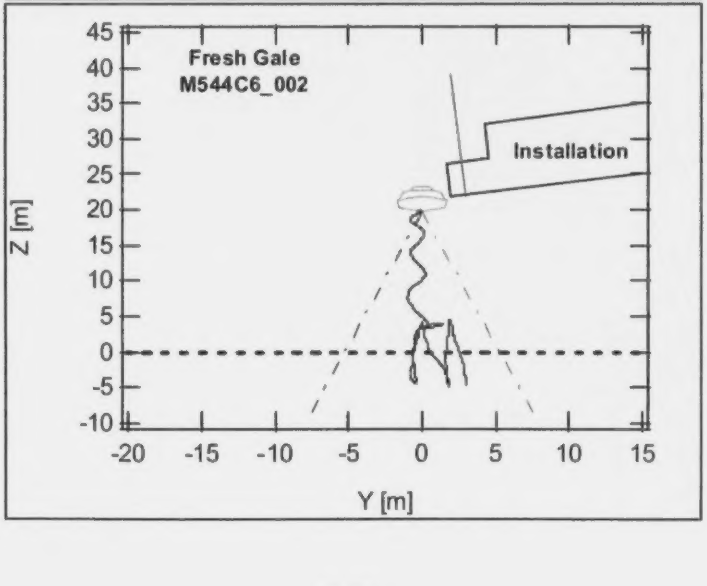
X [m]


Fresh Gale
M544C6_002
Installation
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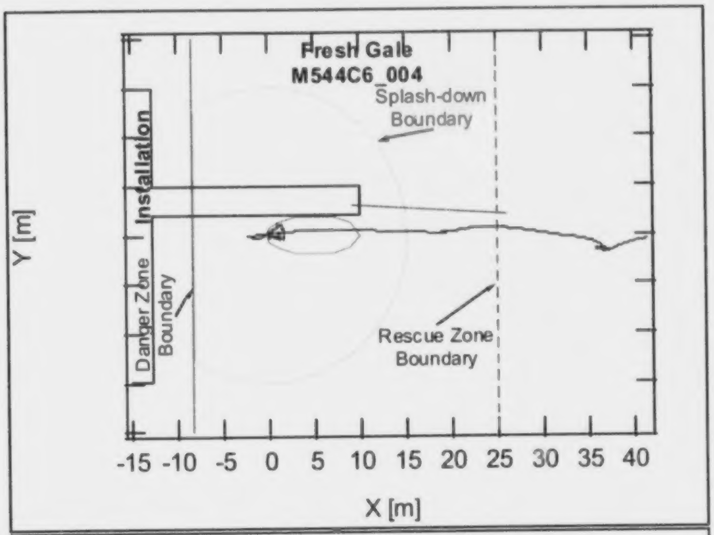
Y [m]


Fresh Gale
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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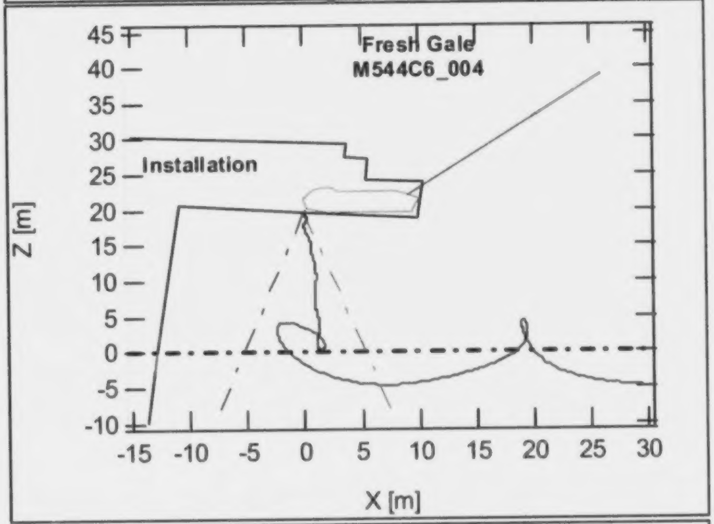
X [m]


Fresh Gale
M544C6_004
Installation
Z [m]
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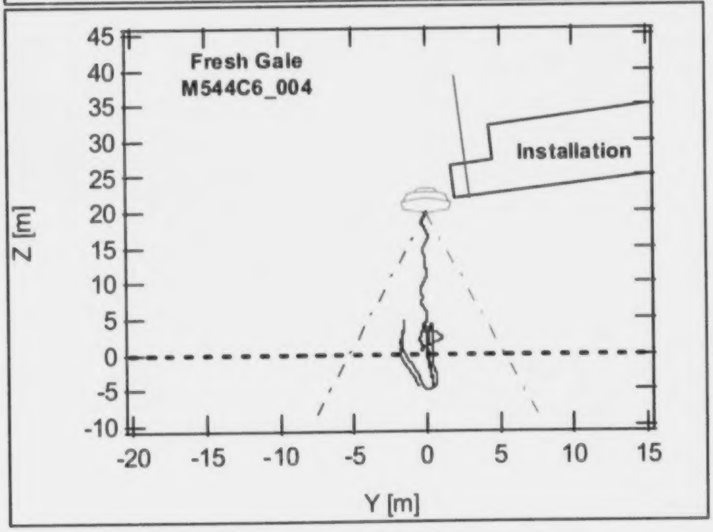
X [m]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Installation
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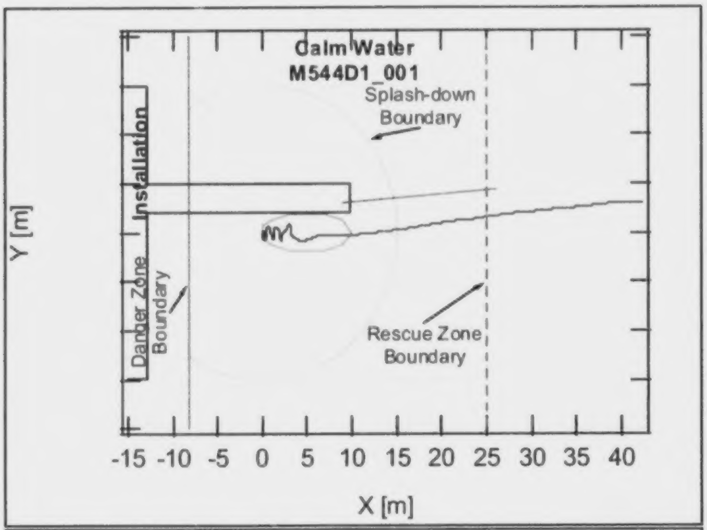
Y [m]


Calm Water
M544D1_001
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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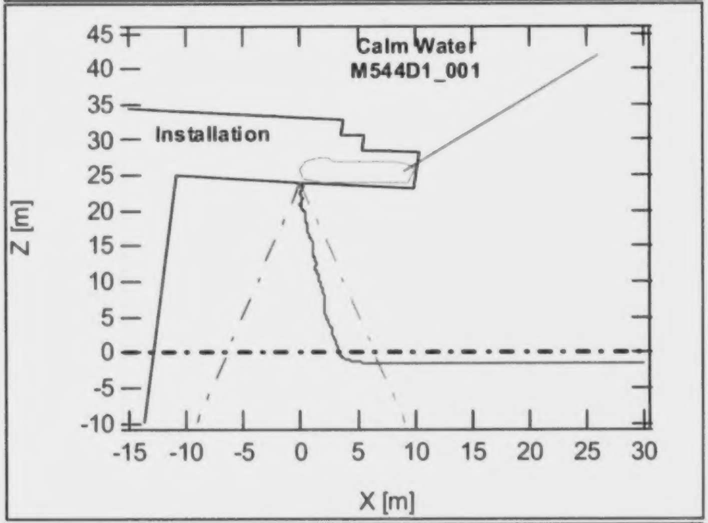
X [m]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Installation
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Z [m]
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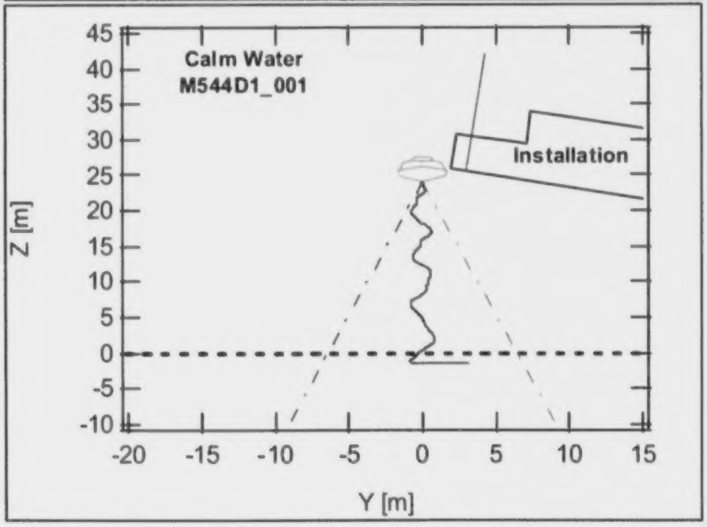
X [m]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Installation
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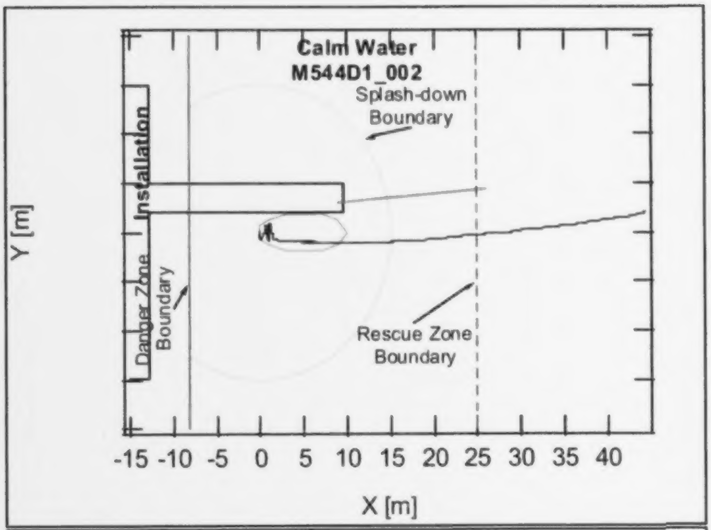
Calm Water
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Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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X [m]
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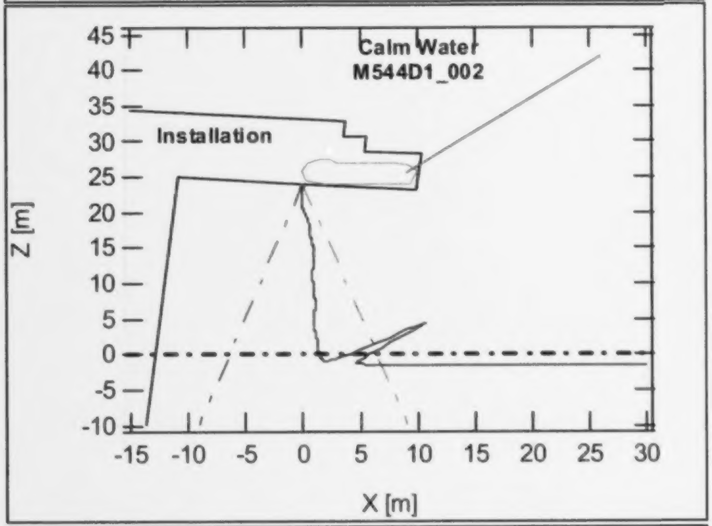
Calm Water
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Installation
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X [m]
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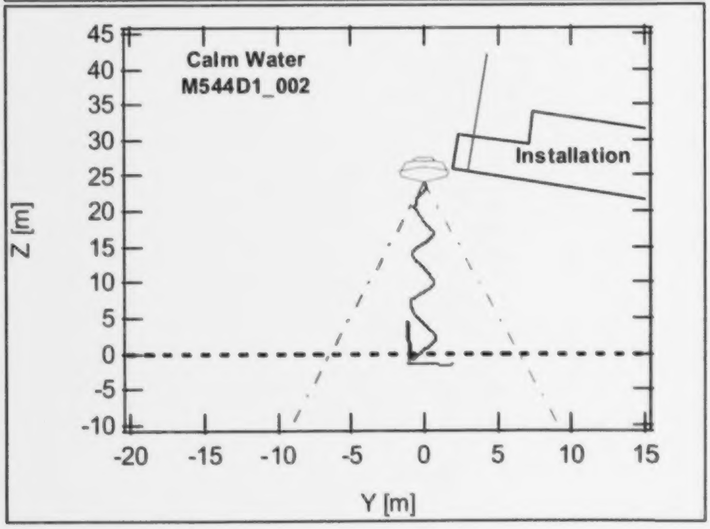
Calm Water
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Installation
Z [m]
Y [m]
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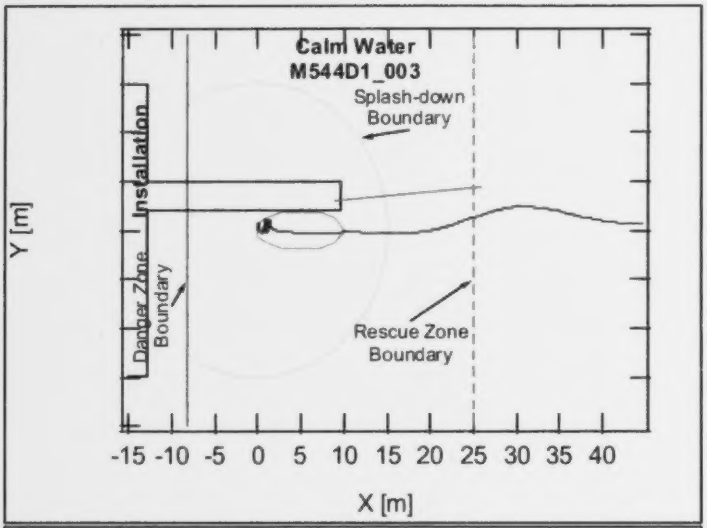
Calm Water
M544D1_003
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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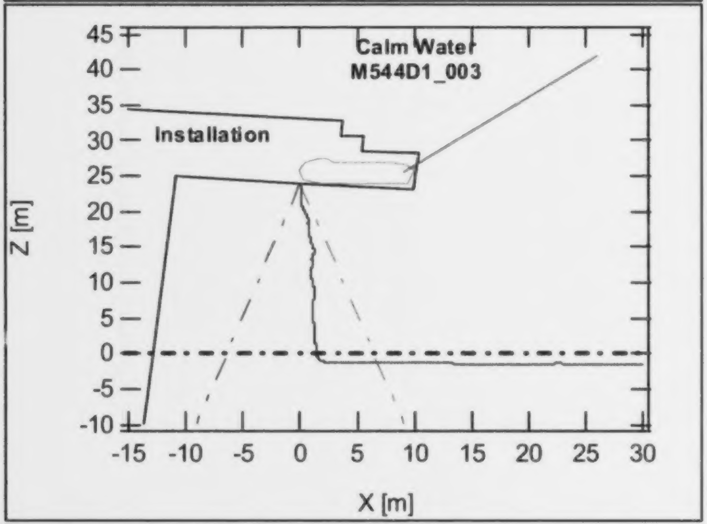
Calm Water
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Installation
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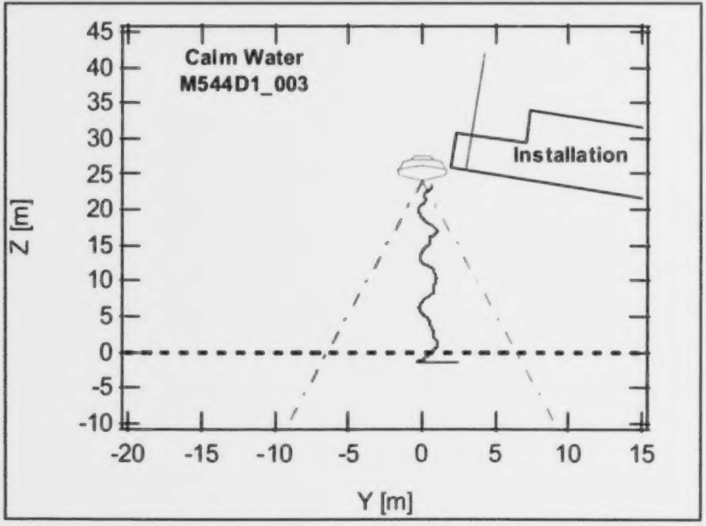
Calm Water
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Installation
Z [m]
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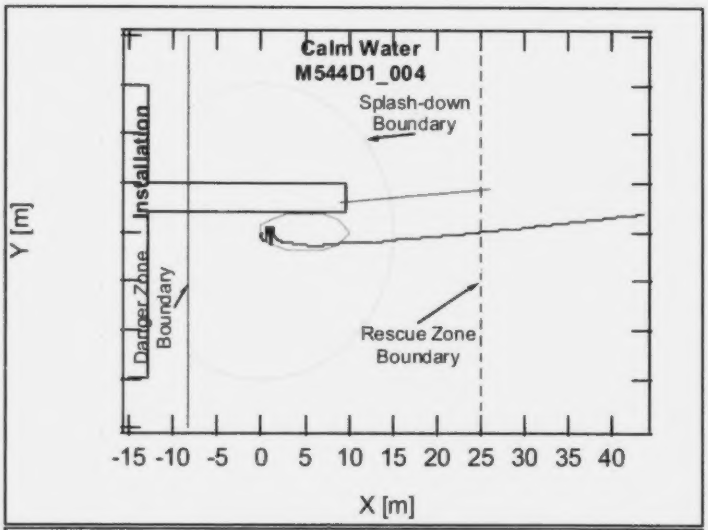
Calm Water
M544D1_004
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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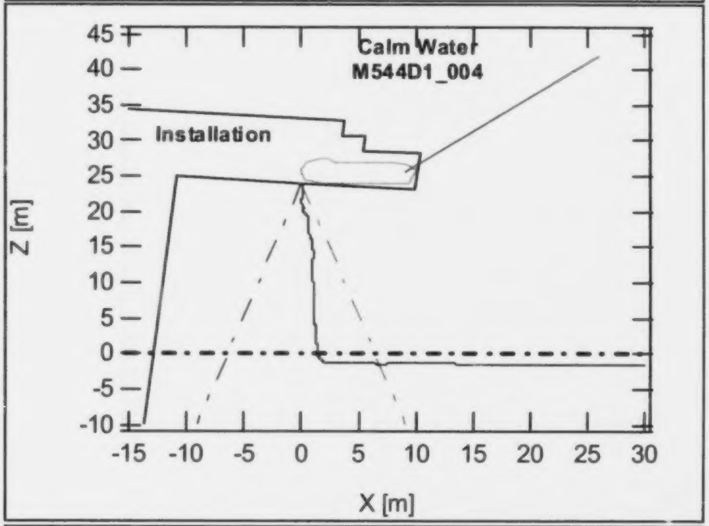
X [m]


Calm Water
M544D1_004
Installation
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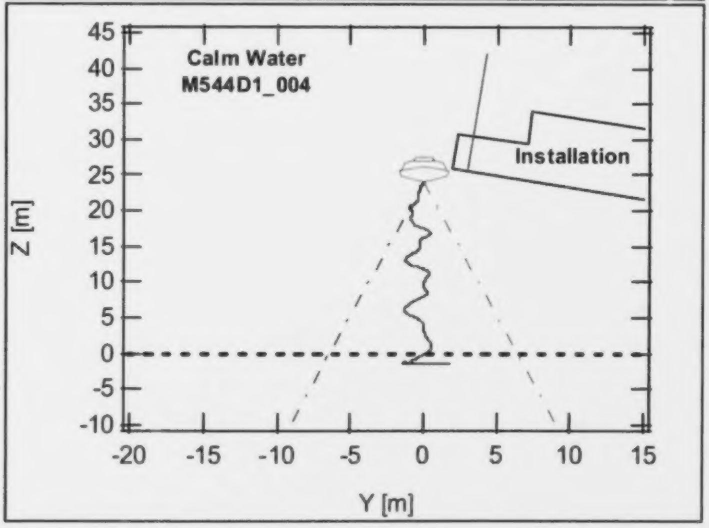
X [m]


Calm Water
M544D1_004
Installation
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Z [m]
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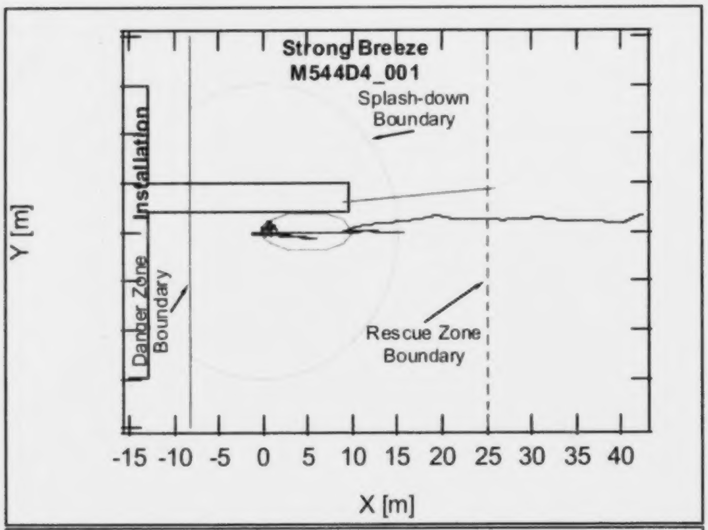
Y [m]


Strong Breeze
M544D4_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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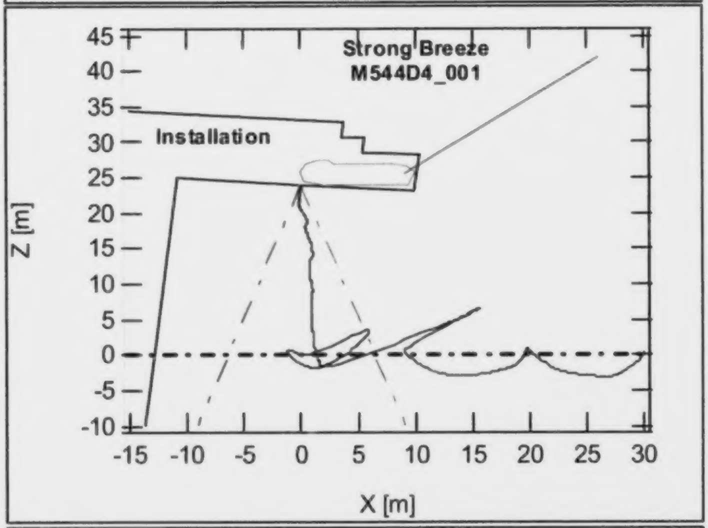
X [m]


Strong Breeze
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Installation
Z [m]
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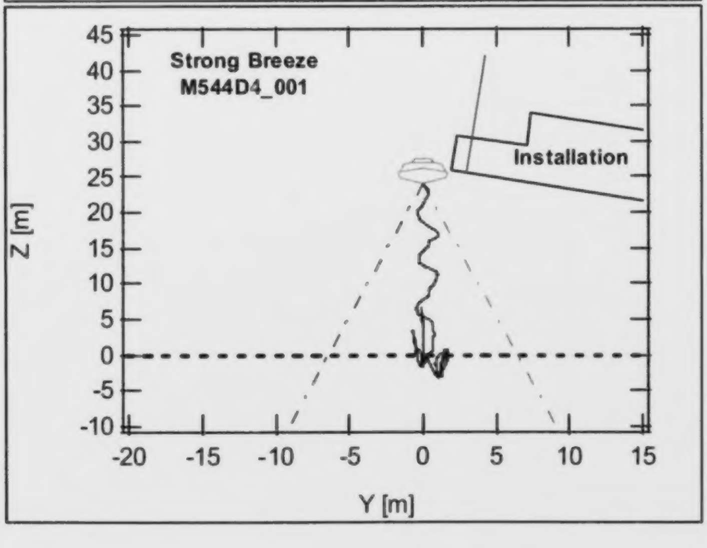
Strong Breeze
M544D4_001
Installation
Z [m]
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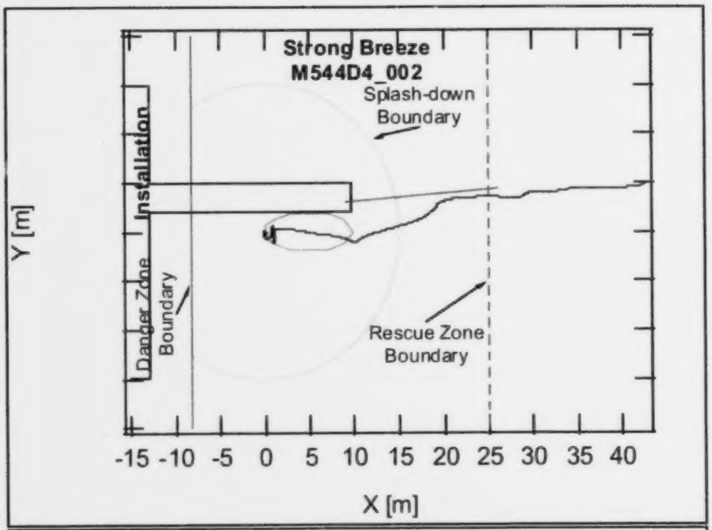
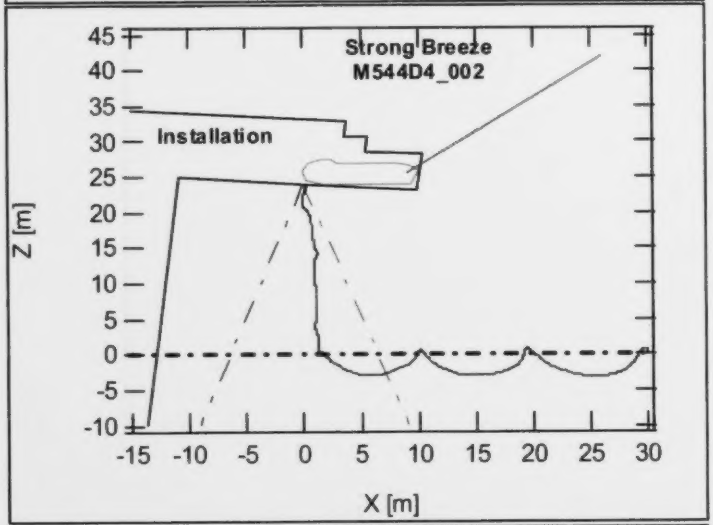
-20 -15 -10 -5 0 5 10 15
Y [m]


Strong Breeze
M544D4_002
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15
-10
-5
0
5
10
15
20
25
30
35
40
X [m]


Strong Breeze
M544D4_002
Installation
45
40
35
30
25
20
15
10
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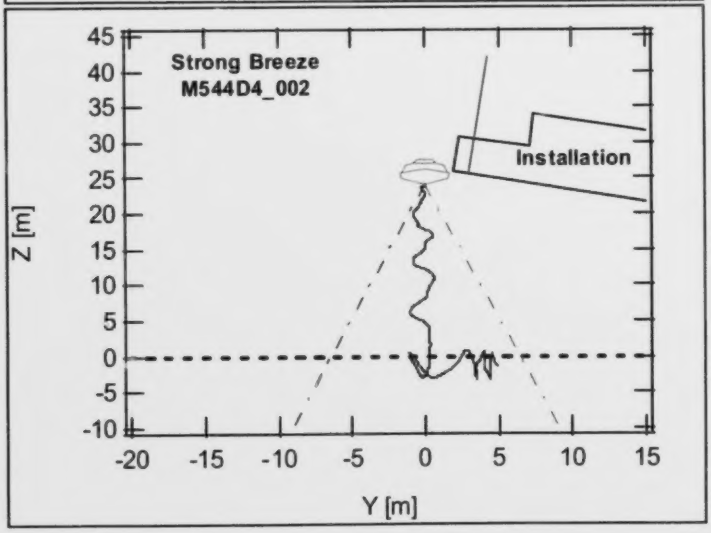
0
-5
-10
Z [m]
-15
-10
-5
0
5
10
15
20
25
30
X [m]


Strong Breeze
M544D4_002
Installation
45
40
35
30
25
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-5
-10
Z [m]
-20
-15
-10
-5
0
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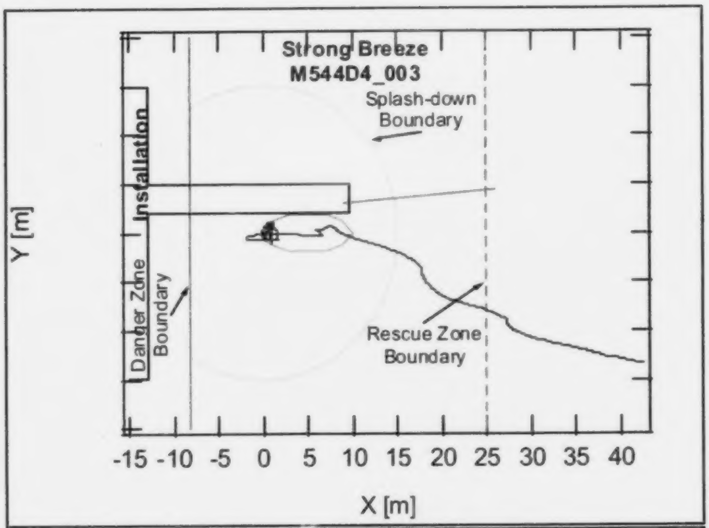
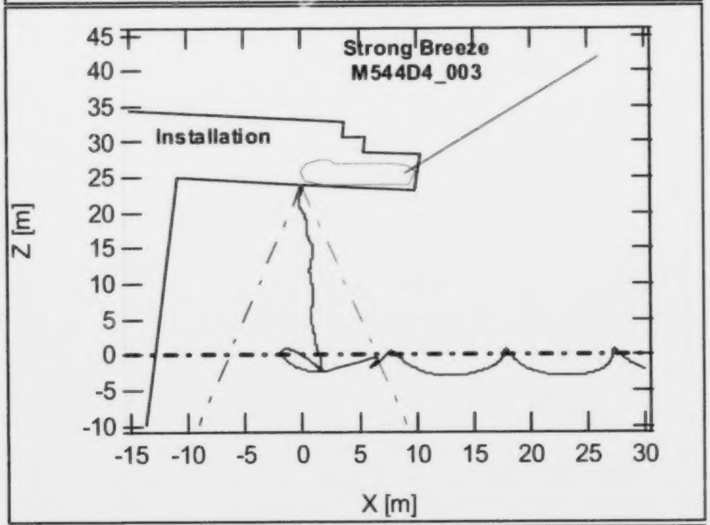
10
15
Y [m]


Strong Breeze
M544D4_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Strong Breeze
M544D4_003
Installation
Z [m]
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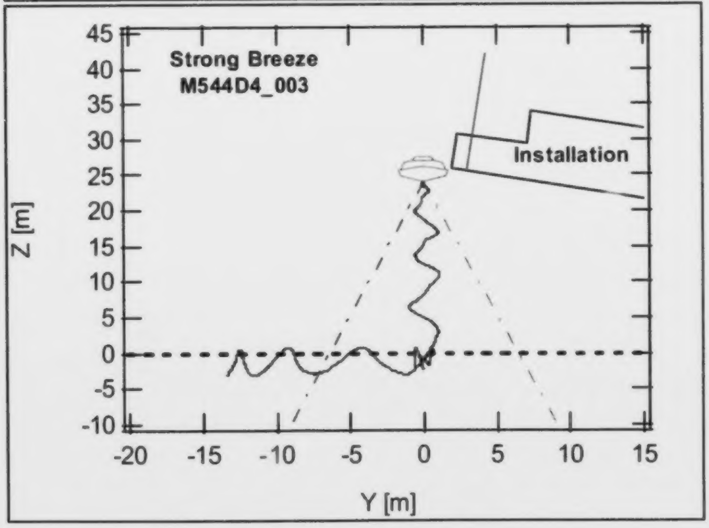
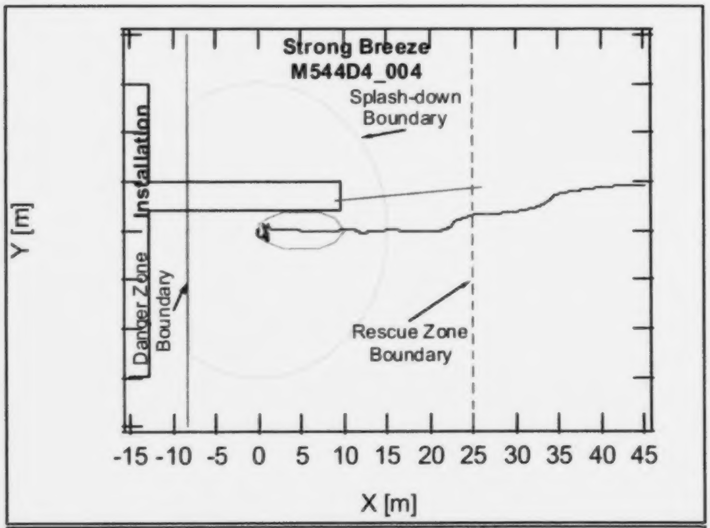
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Strong Breeze
M544D4_003
Installation
Z [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-20 -15 -10 -5 0 5 10 15
Y [m]


Strong Breeze
M544D4_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15
-10
-5
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5
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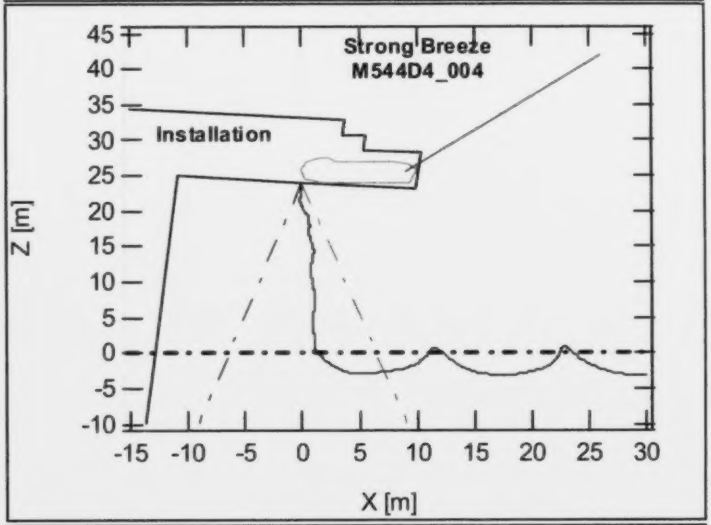
20
25
30
35
40
45
X [m]


Strong Breeze
M544D4_004
Installation
45
40
35
30
25
20
15
10
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0
-5
-10
Z [m]
-15
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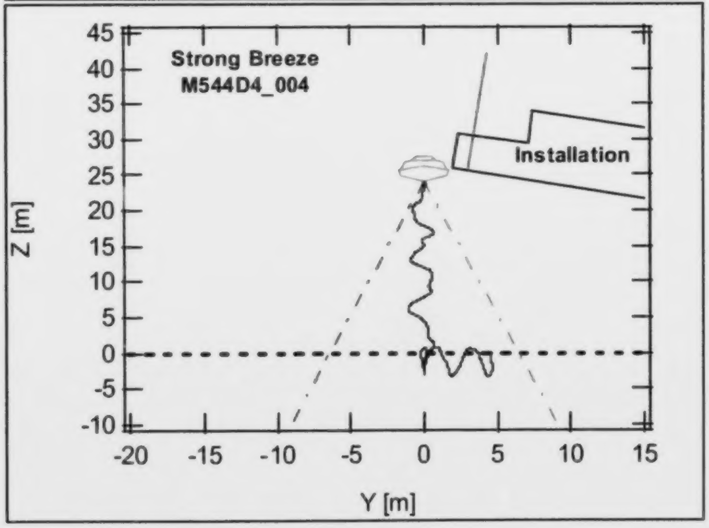
10
15
20
25
30
X [m]


Strong Breeze
M544D4_004
Installation
45
40
35
30
25
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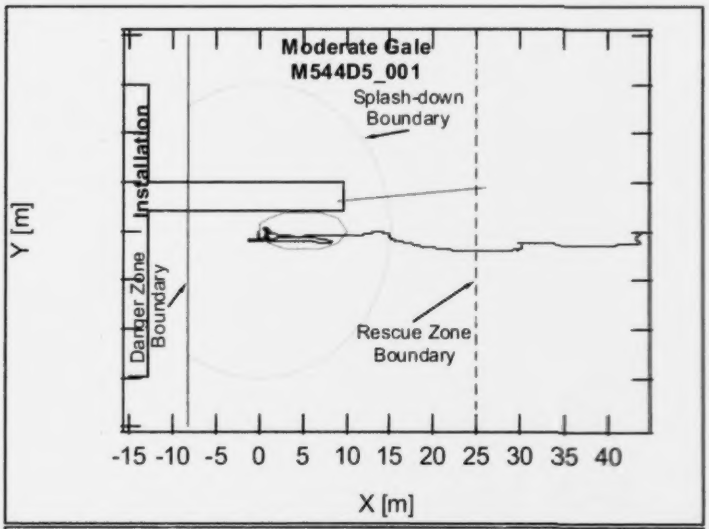
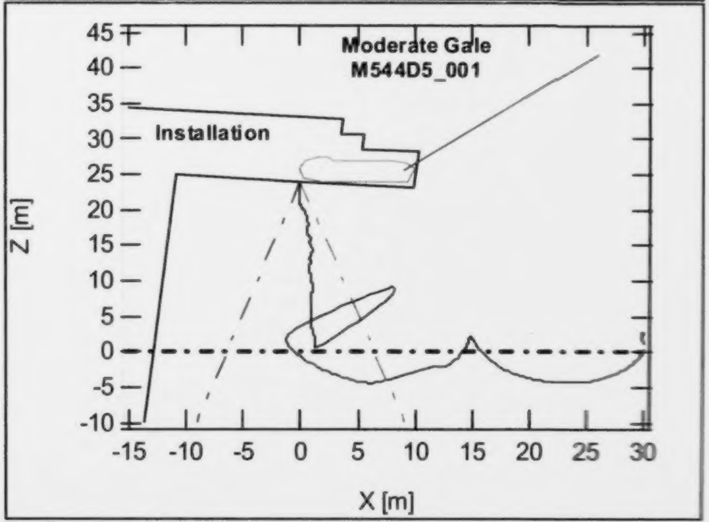
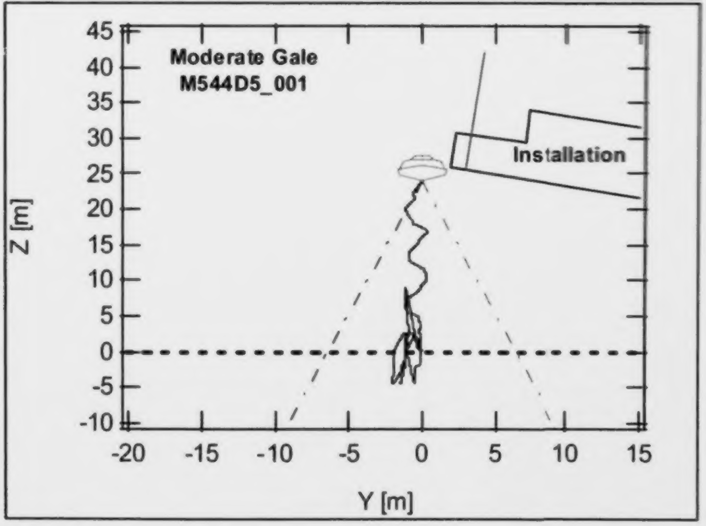
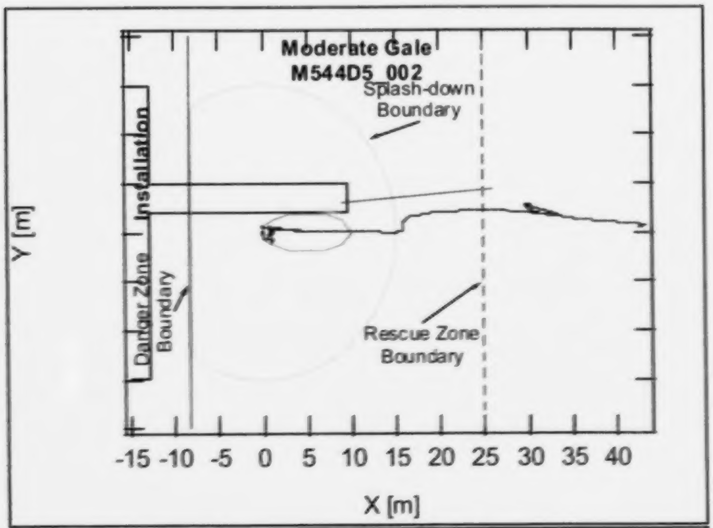
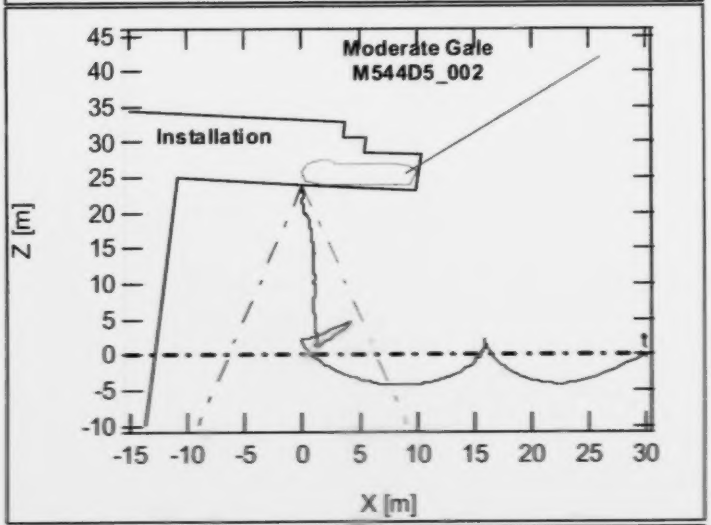
-5
-10
Z [m]
-20
-15
-10
-5
0
5
10
15
Y [m]


Moderate Gale
M544D5_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Moderate Gale
M544D5_001
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Moderate Gale
M544D5_001
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z [m]
-20 -15 -10 -5 0 5 10 15
Y [m]


Moderate Gale
M544D5_002
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Moderate Gale
M544D5_002
Installation
Z [m]
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40
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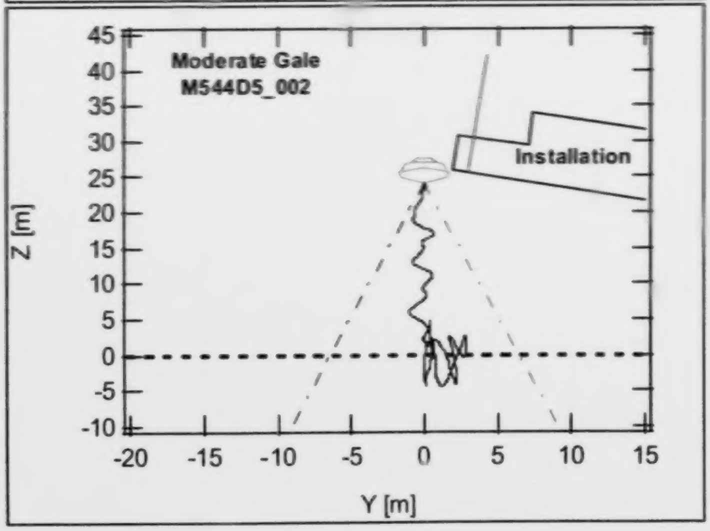
30
25
20
15
10
5
0
-5
-10
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Moderate Gale
M544D5_002
Installation
Z [m]
45
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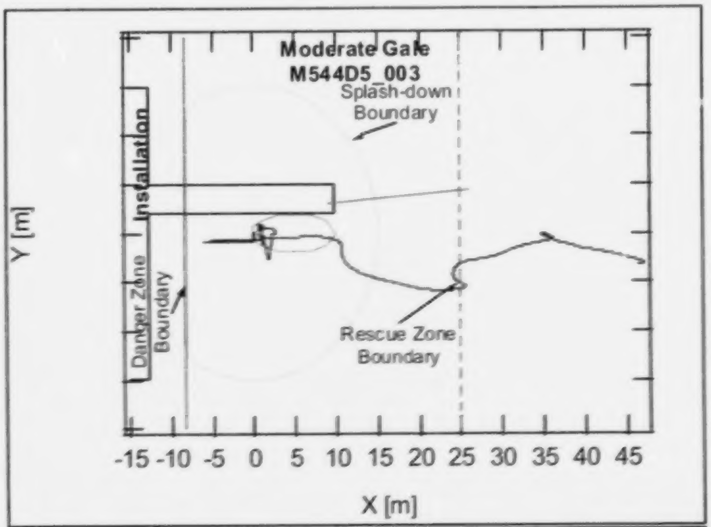
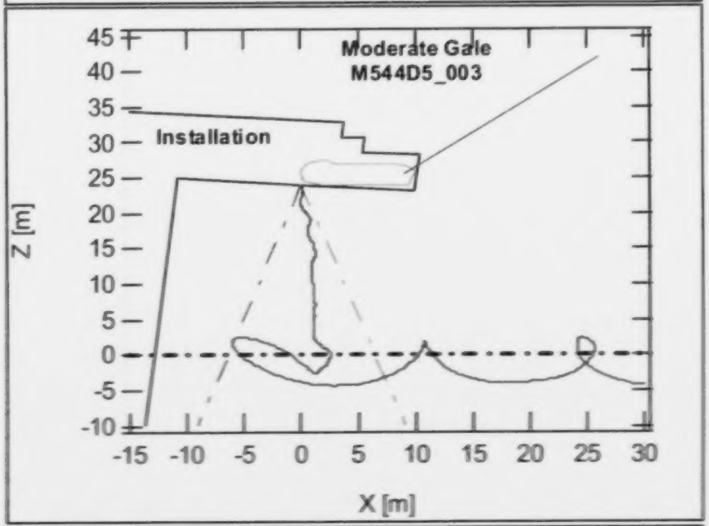
30
25
20
15
10
5
0
-5
-10
-20 -15 -10 -5 0 5 10 15
Y [m]


Moderate Gale
M544D5_003
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40 45
X [m]


Moderate Gale
M544D5_003
Installation
45
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30
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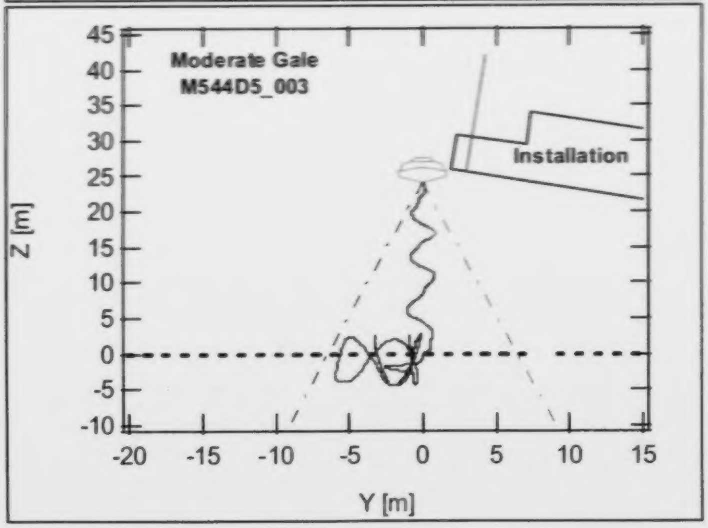
20
15
10
5
0
-5
-10
Z [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Moderate Gale
M544D5_003
Installation
45
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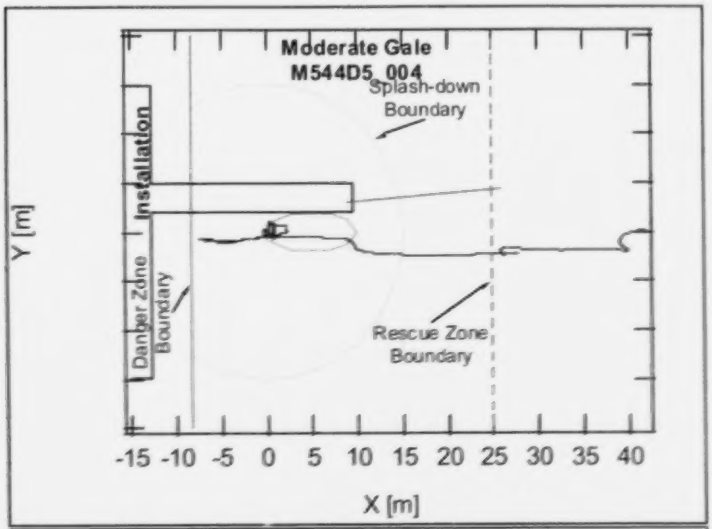
20
15
10
5
0
-5
-10
Z [m]
-20 -15 -10 -5 0 5 10 15
Y [m]


Moderate Gale
M544D5_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15
-10
-5
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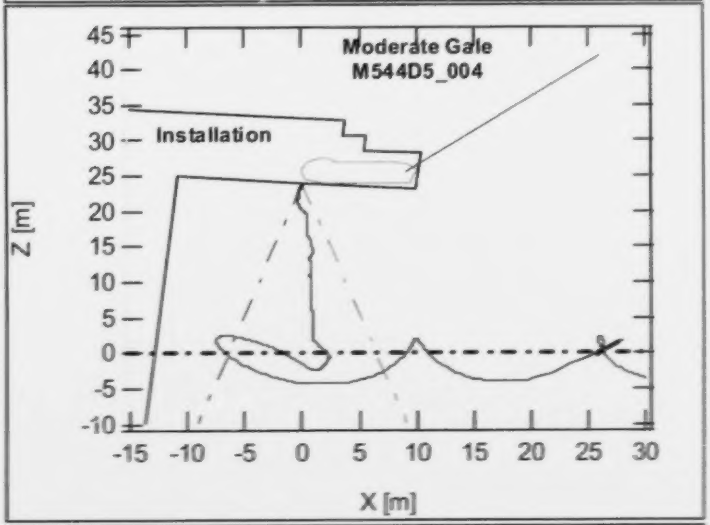
20
25
30
35
40
X [m]


Moderate Gale
M544D5_004
Installation
Z [m]
45
40
35
30
25
20
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10
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0
-5
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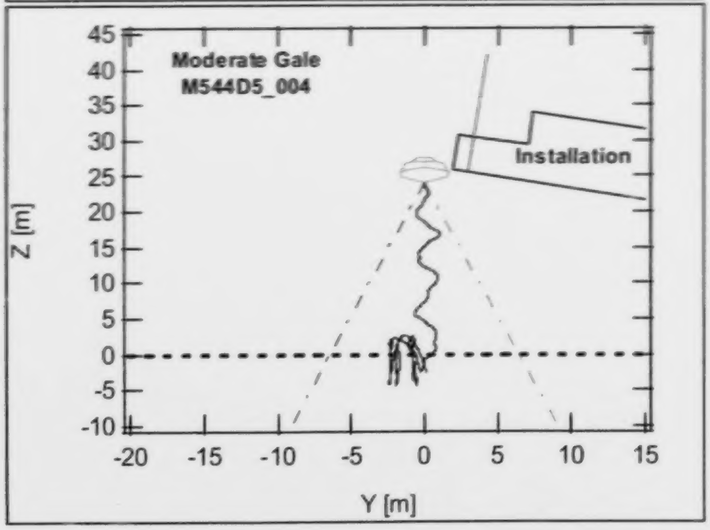
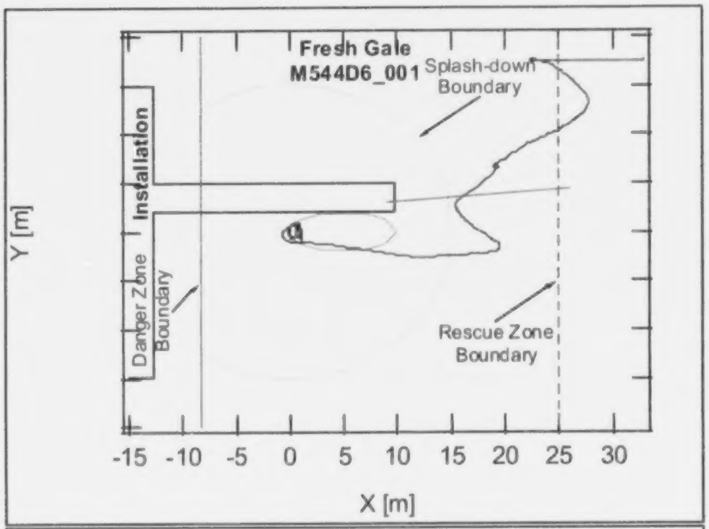
10
15
20
25
30
X [m]


Moderate Gale
M544D5_004
Installation
Z [m]
45
40
35
30
25
20
15
10
5
0
-5
-10
-20
-15
-10
-5
0
5
10
15
Y [m]


Fresh Gale
M544D6_001
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15
-10
-5
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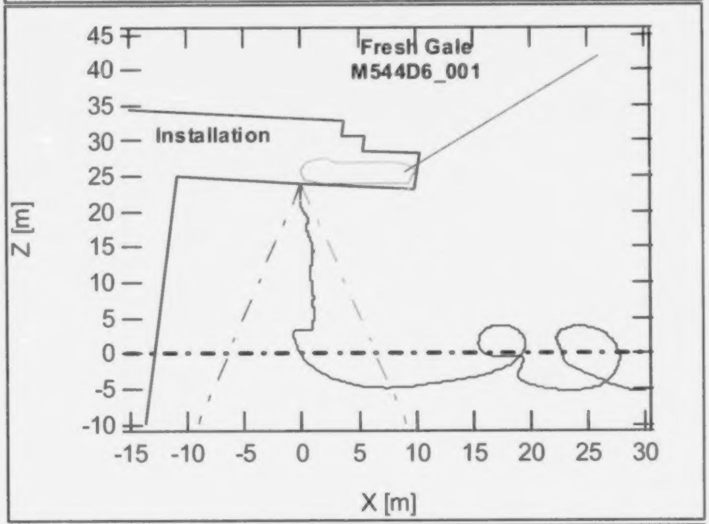
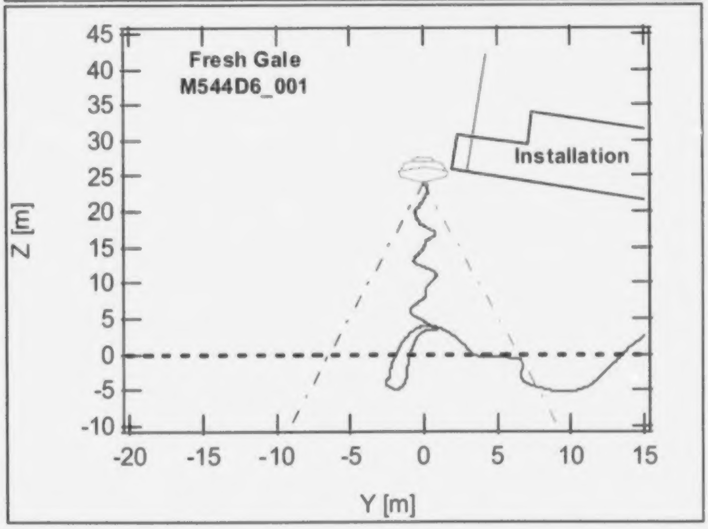
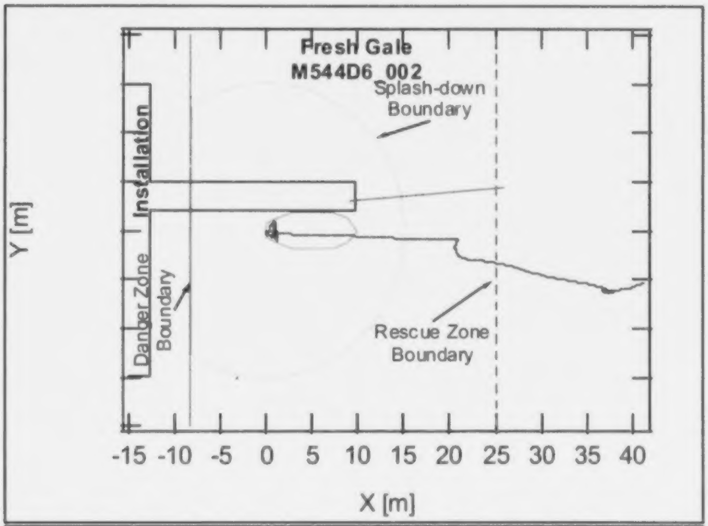
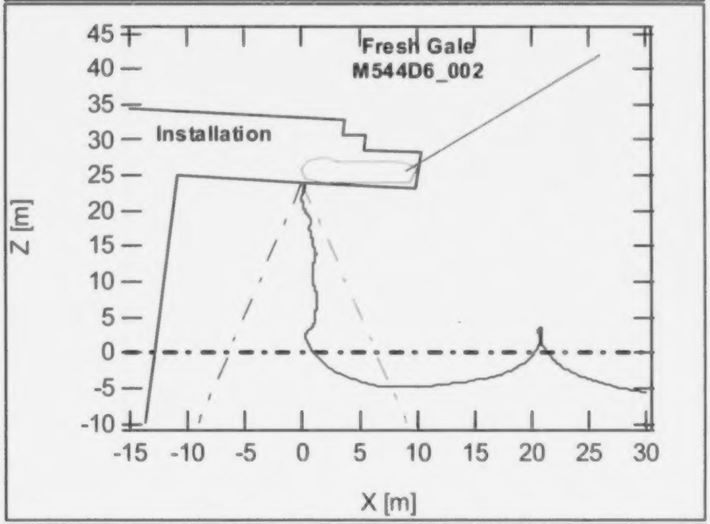
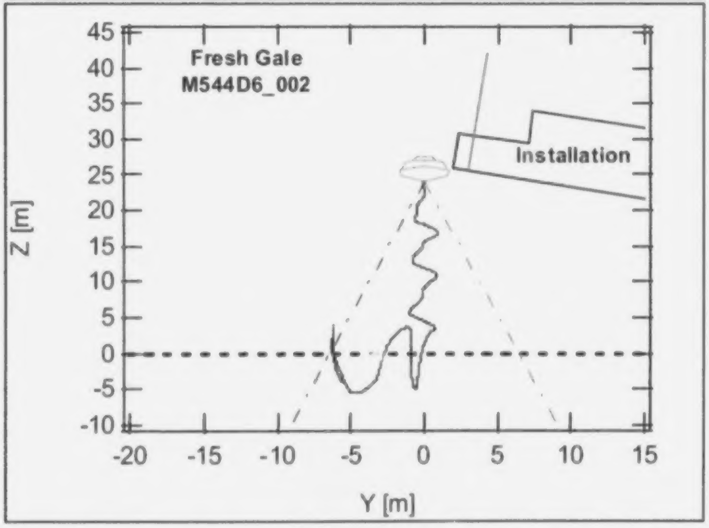
10
15
20
25
30
X [m]

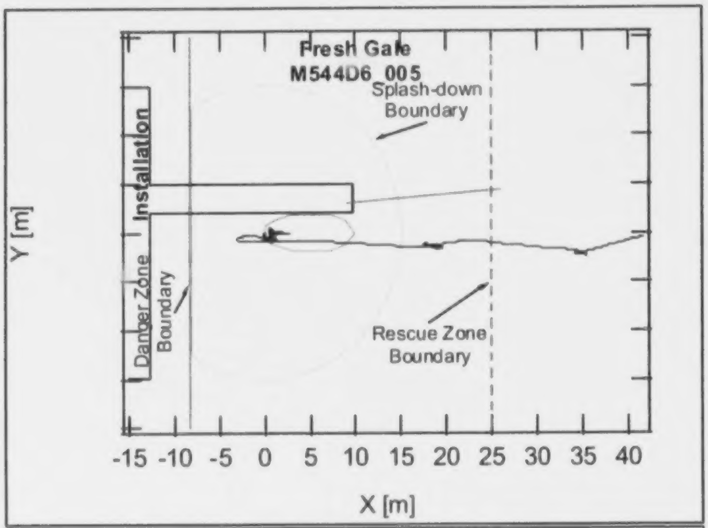

Fresh Gale
M544D6_001
Installation
45
40
35
30
25
20
15
10
5
0
-5
-10
Z [m]
-15
-10
-5
0
5
10
15
20
25
30
X [m]


Fresh Gale
M544D6_001
Installation
45
40
35
30
25
20
15
10
5
0
-5
-10
Z [m]
-20
-15
-10
-5
0
5
10
15
Y [m]


Fresh Gale
M544D6_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Fresh Gale
M544D6_002
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Fresh Gale
M544D6_002
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z [m]
-20 -15 -10 -5 0 5 10 15
Y [m]


Fresh Gale
M544D6_005
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15
-10
-5
0
5
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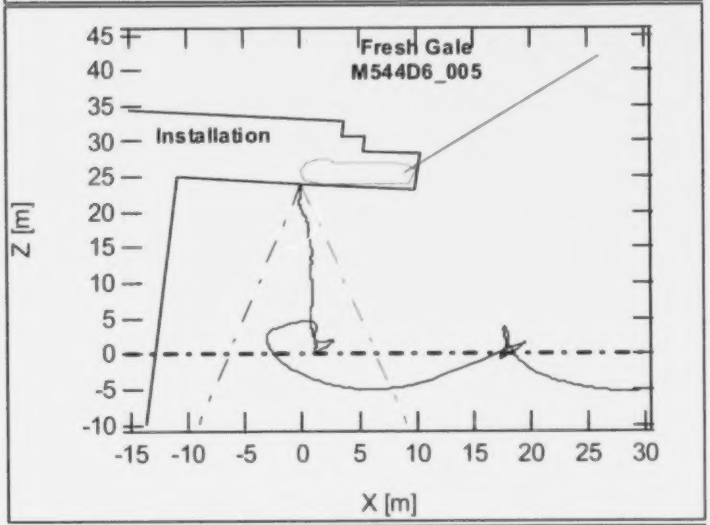
15
20
25
30
35
40
X [m]


Fresh Gale
M544D6_005
Installation
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30
25
20
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0
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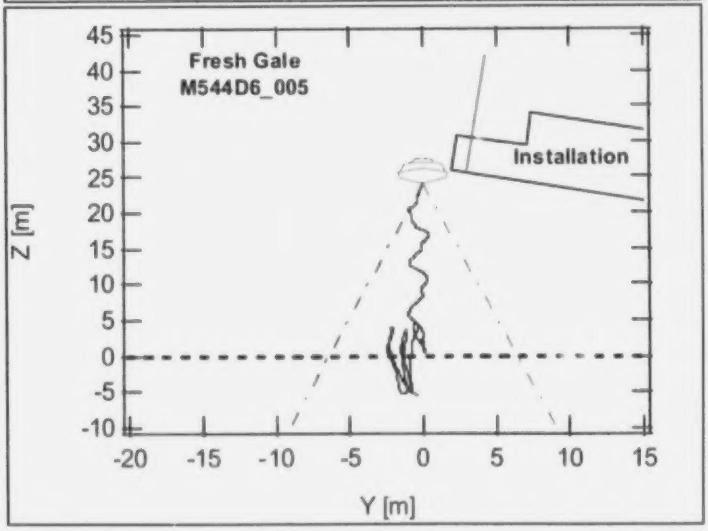
-10
Z [m]
-15
-10
-5
0
5
10
15
20
25
30
X [m]


Fresh Gale
M544D6_005
Installation
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30
25
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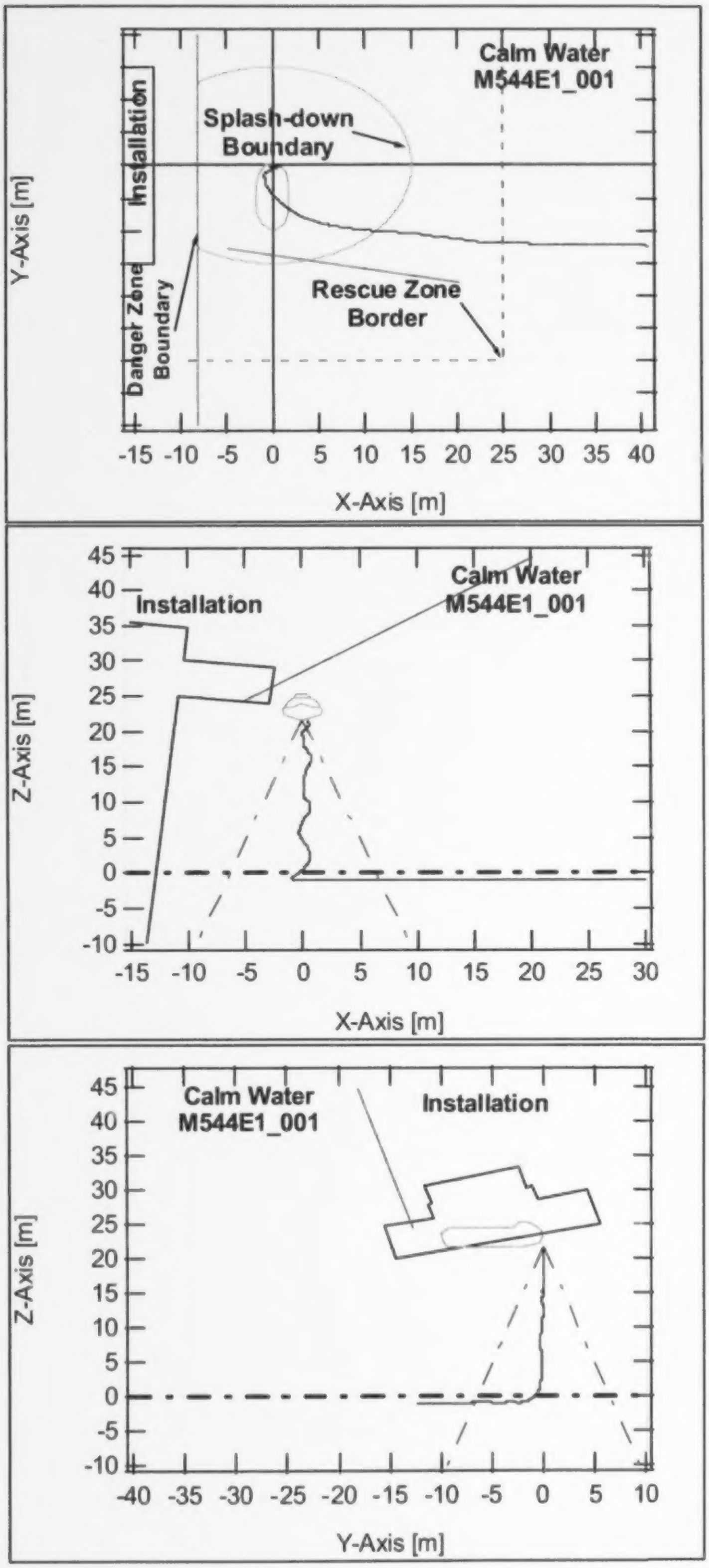
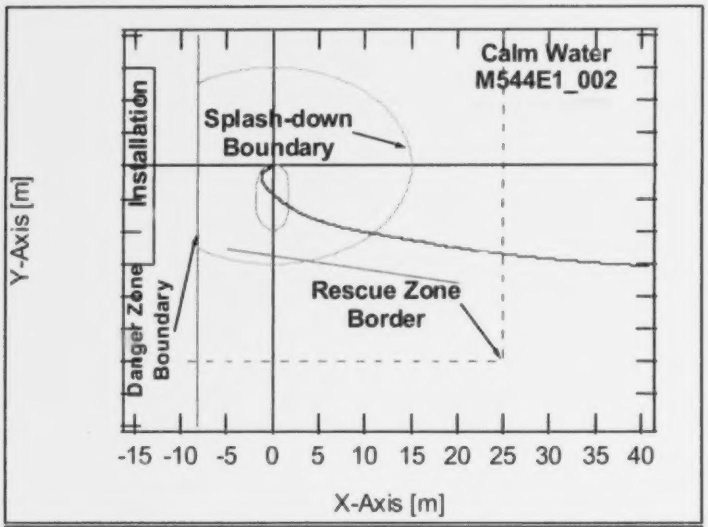
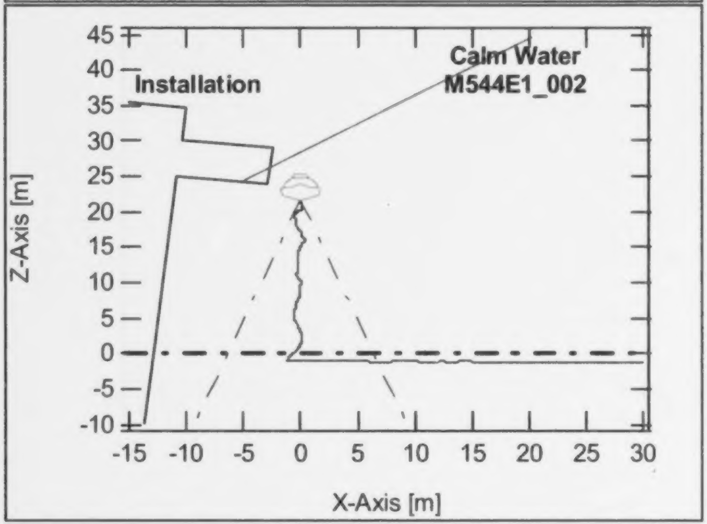
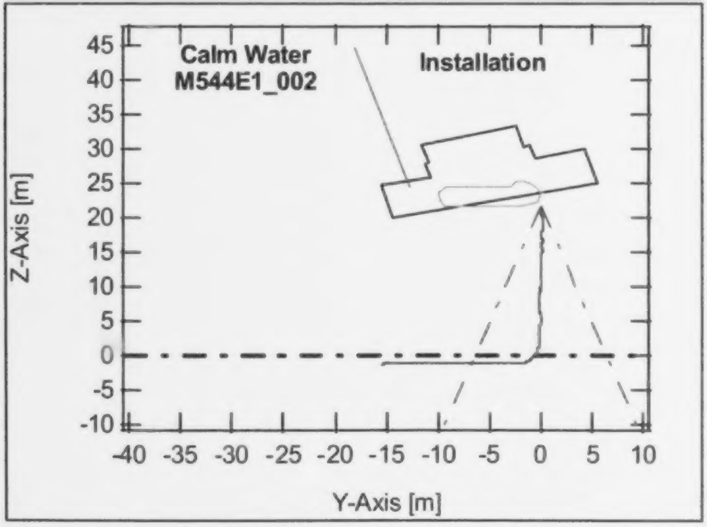
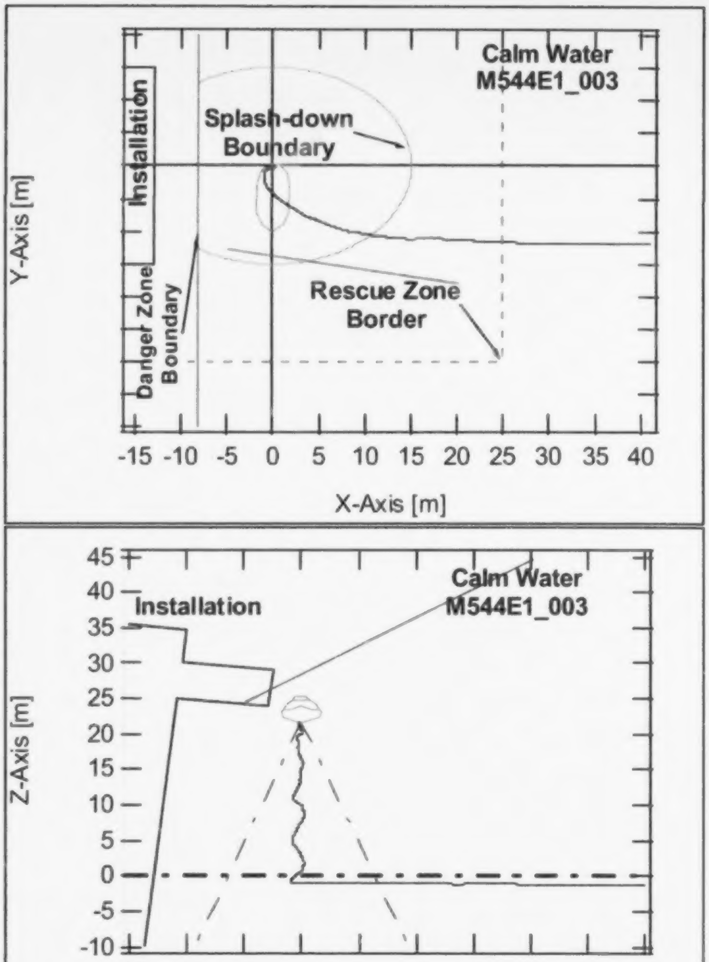
-5
-10
Z [m]
-20
-15
-10
-5
0
5
10
15
Y [m]

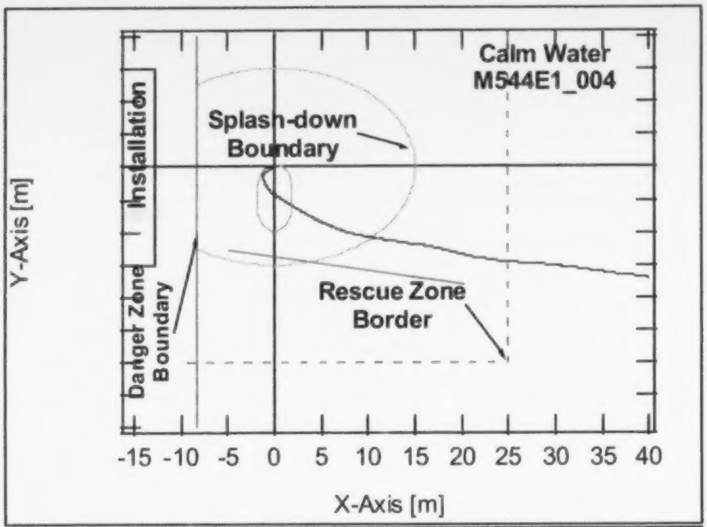

Calm Water
M544E1_001
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
-15
-10
-5
0
5
10
15
20
25
30
35
40
Calm Water
M544E1_001
Installation
Z-Axis [m]
45
40
35
30
25
20
15
10
5
0
-5
-10
X-Axis [m]
-15
-10
-5
0
5
10
15
20
25
30
Calm Water
M544E1_001
Installation
Z-Axis [m]
45
40
35
30
25
20
15
10
5
0
-5
-10
Y-Axis [m]
-40
-35
-30
-25
-20
-15
-10
-5
0
5
10

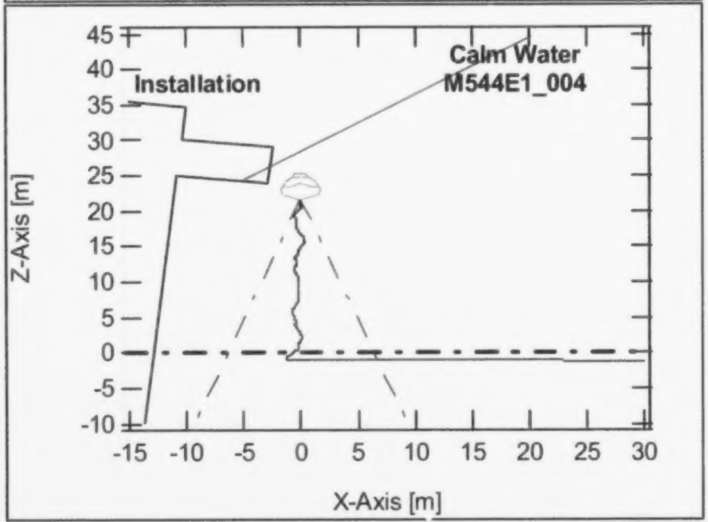

Calm Water
M544E1_002
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]

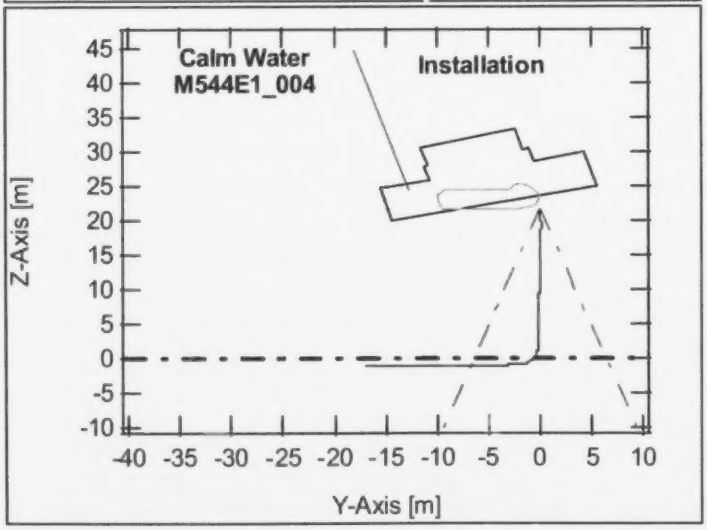

Calm Water
M544E1_002
Installation
45
40
35
30
25
20
15
10
5
0
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544E1_002
Installation
45
40
35
30
25
20
15
10
5
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544E1_003
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
X-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
Calm Water
M544E1_003
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Calm Water
M544E1_003
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544E1_004
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Installation
Calm Water
M544E1_004
45
40
35
30
25
20
15
10
5
0
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544E1_004
Installation
45
40
35
30
25
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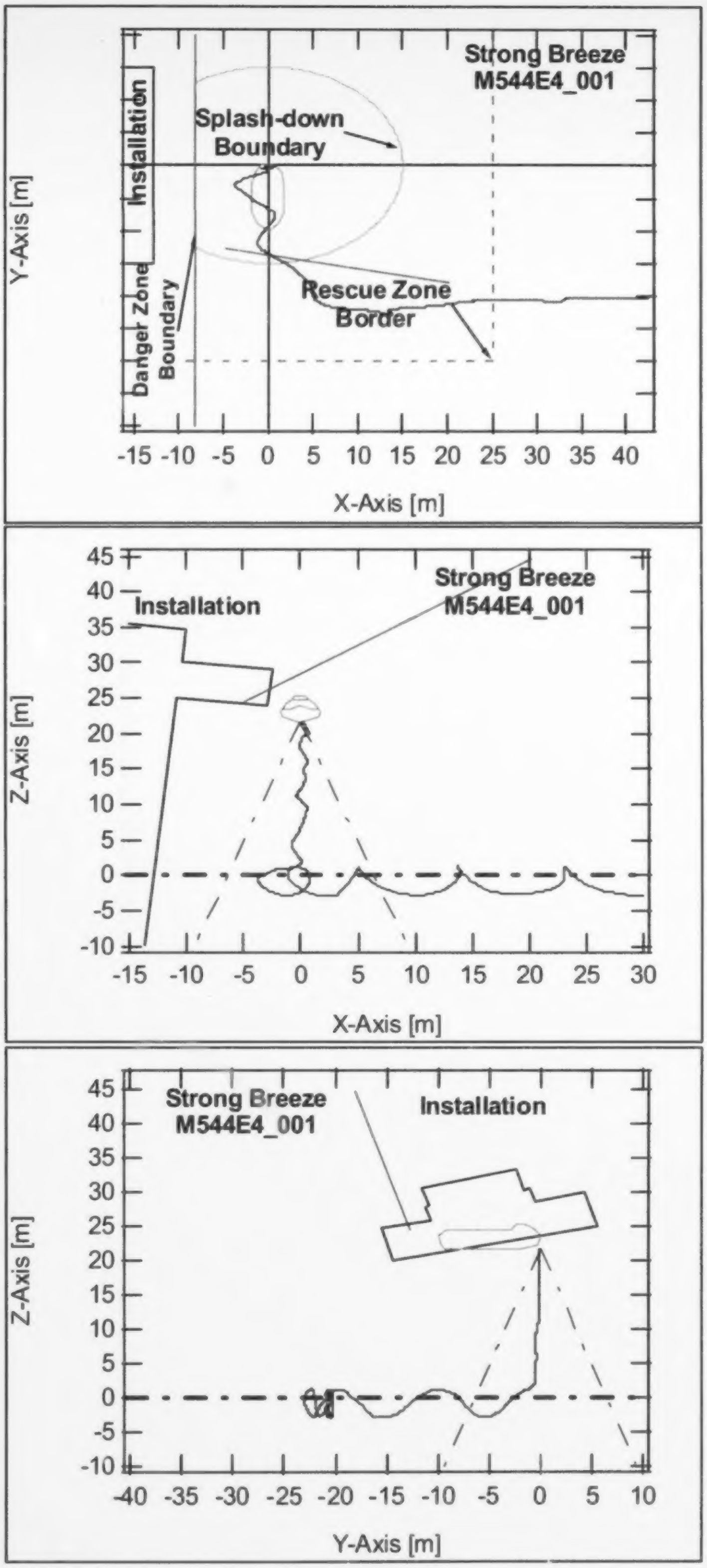
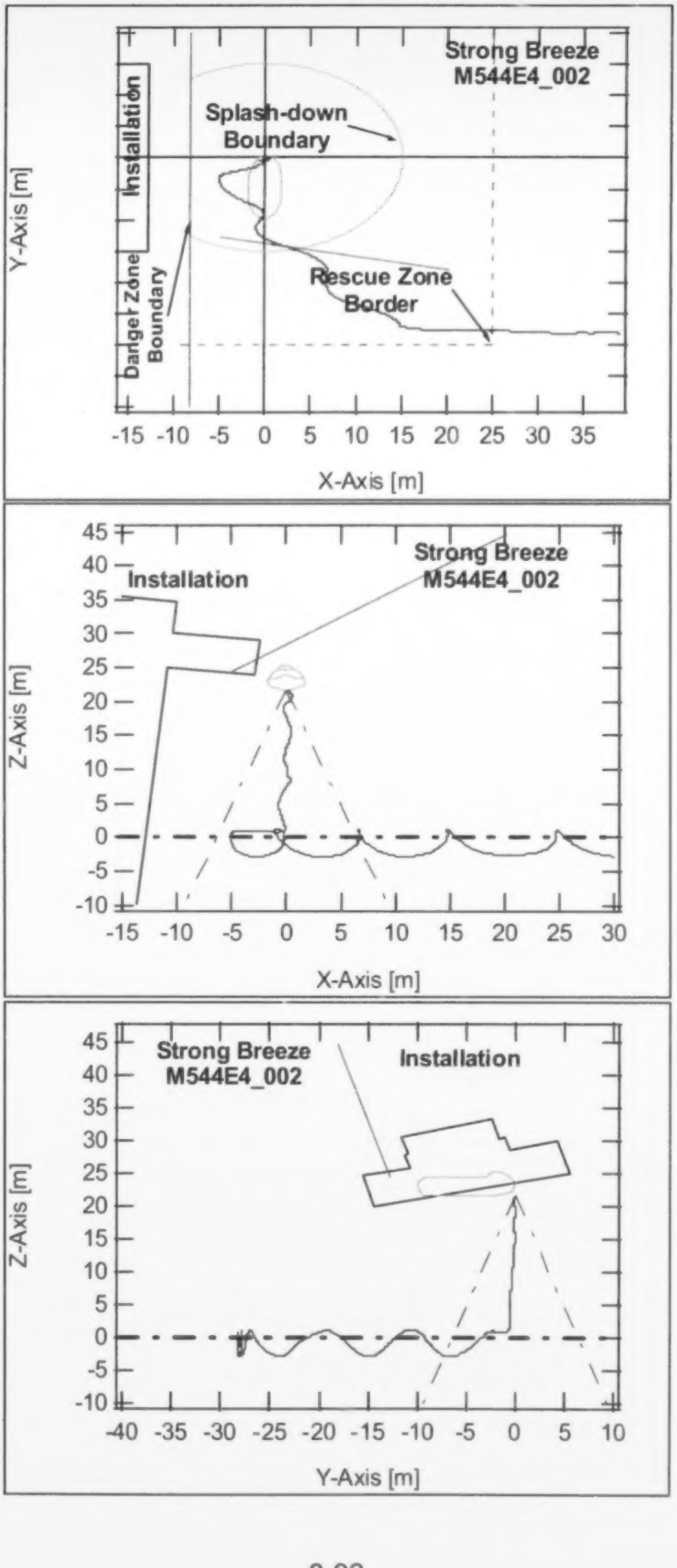
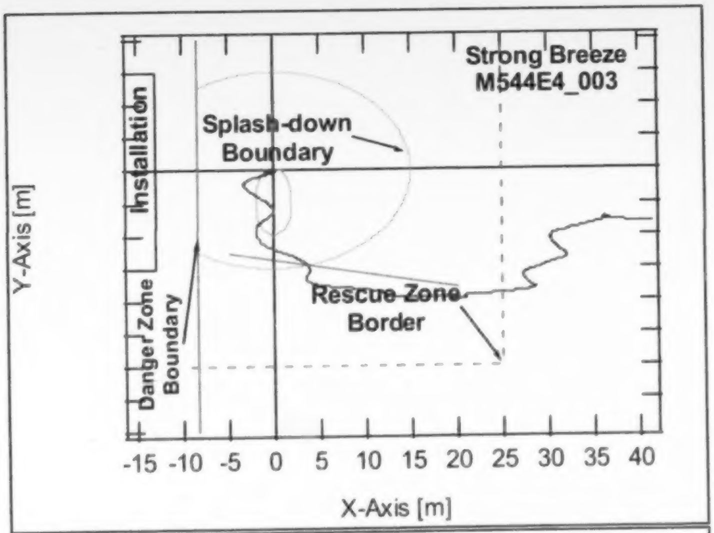
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Strong Breeze
M544E4_001
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
Strong Breeze
M544E4_001
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Strong Breeze
M544E4_001
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Strong Breeze
M544E4_002
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35
X-Axis [m]
Strong Breeze
M544E4_002
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Strong Breeze
M544E4_002
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Strong Breeze
M544E4_003
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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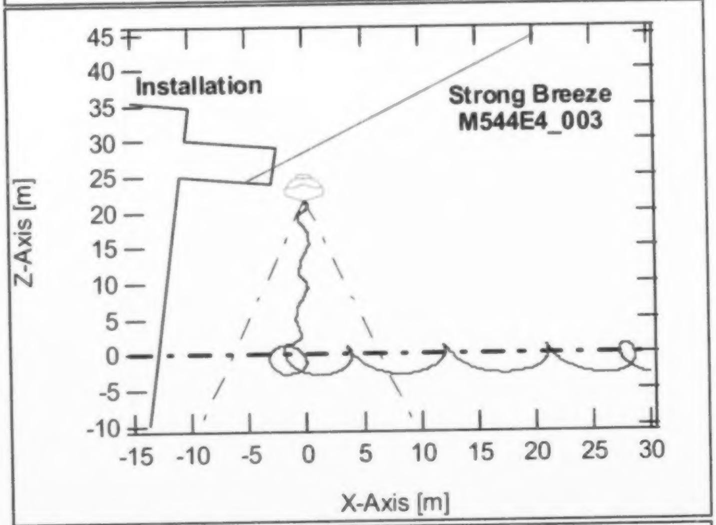
X-Axis [m]


Installation
Strong Breeze
M544E4_003
Z-Axis [m]
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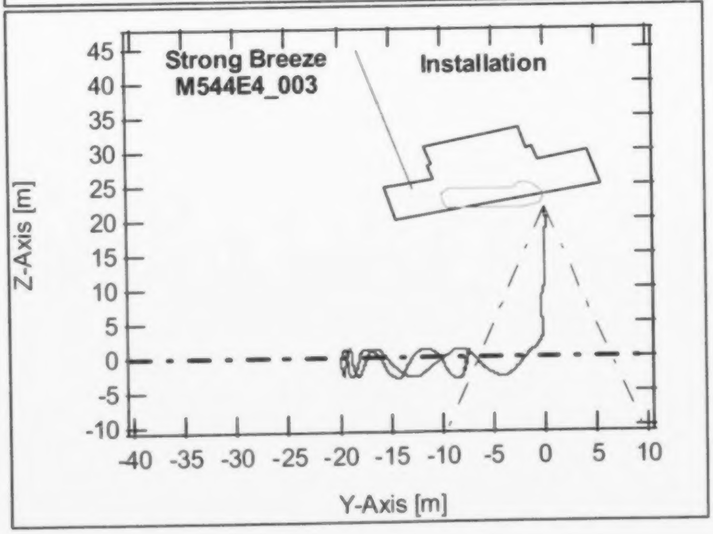
-5
-10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544E4_003
Installation
Z-Axis [m]
45
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-10
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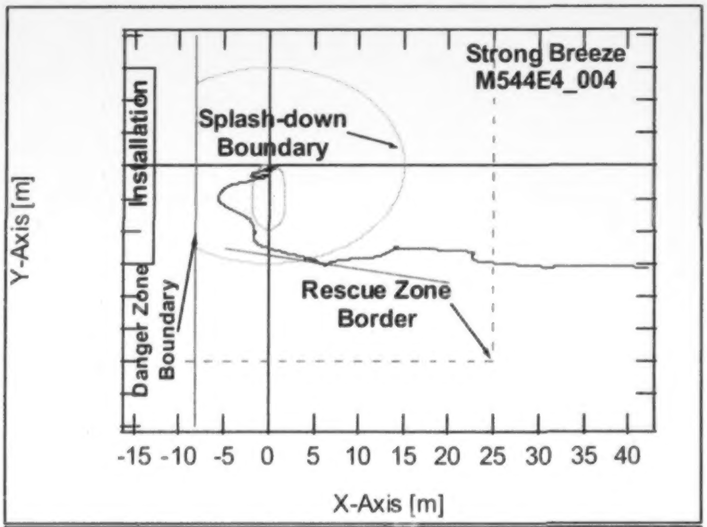
Y-Axis [m]


Strong Breeze
M544E4_004
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
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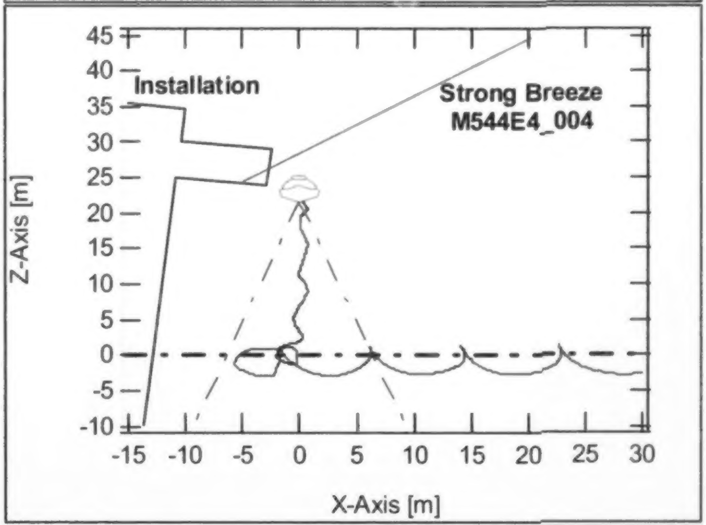
X-Axis [m]


Installation
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M544E4_004
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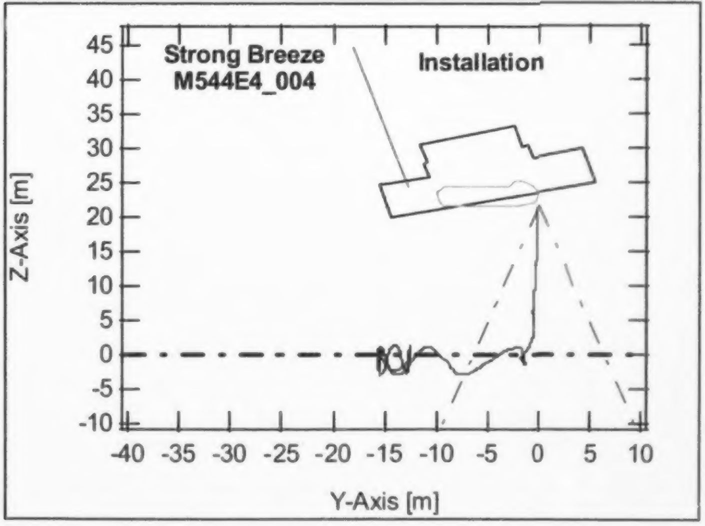
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M544E4_004
Installation
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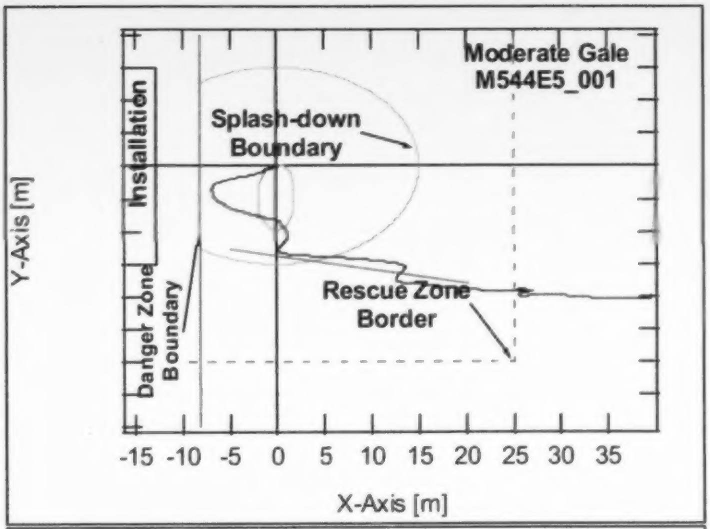
Y-Axis [m]


Moderate Gale
M544E5_001
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
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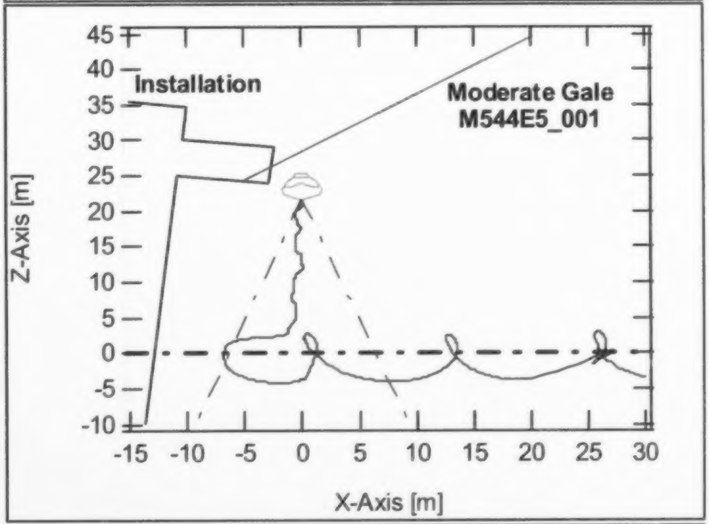
X-Axis [m]


Installation
Moderate Gale
M544E5_001
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Z-Axis [m]
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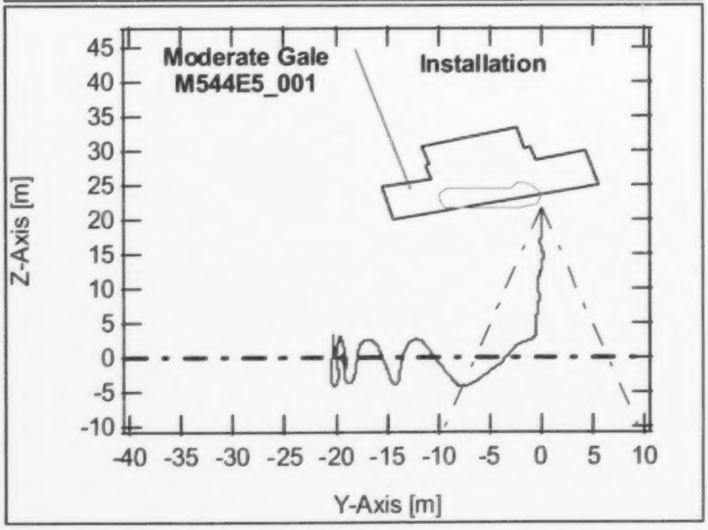
X-Axis [m]


Moderate Gale
M544E5_001
Installation
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Z-Axis [m]
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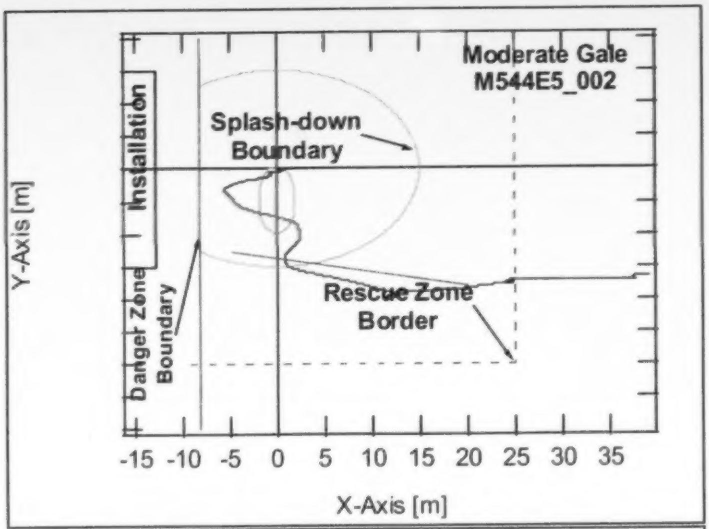
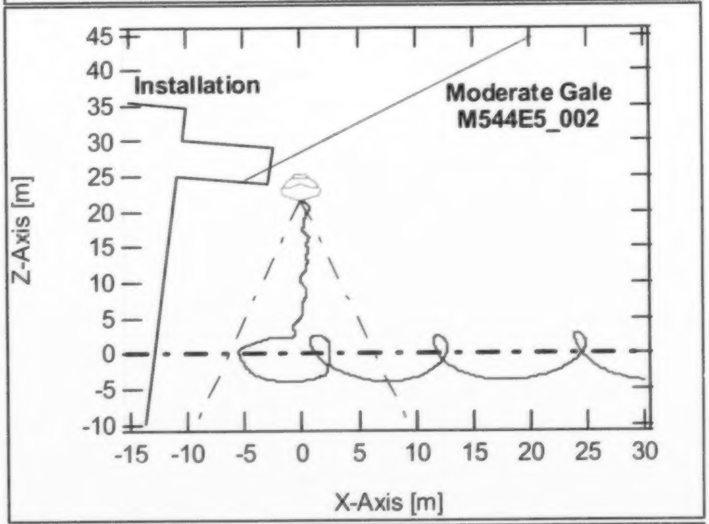
Y-Axis [m]


Moderate Gale
M544E5_002
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
X-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35


Installation
Moderate Gale
M544E5_002
Z-Axis [m]
X-Axis [m]
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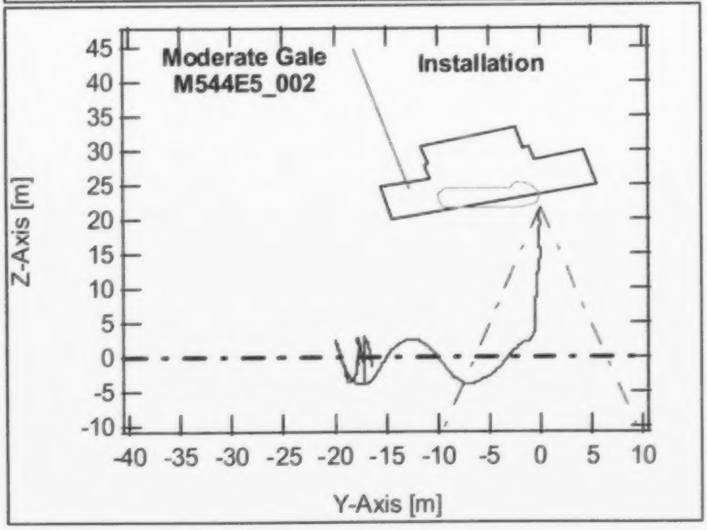
Moderate Gale
M544E5_002
Installation
Z-Axis [m]
Y-Axis [m]
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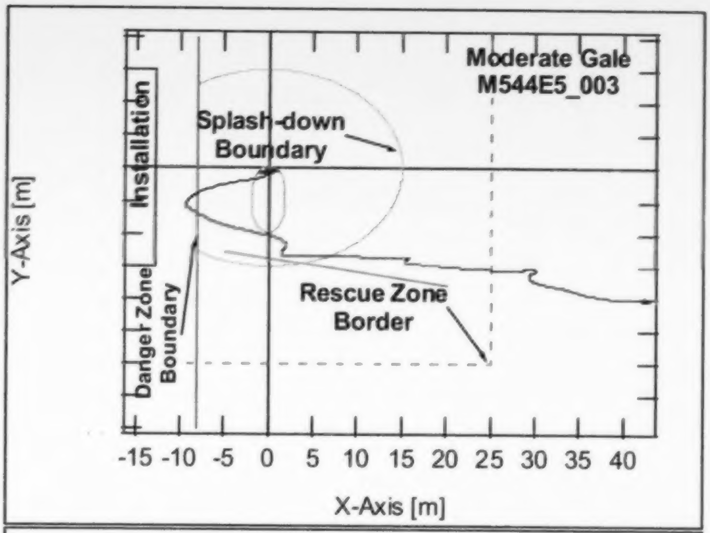
Moderate Gale
M544E5_003
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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-10
-5
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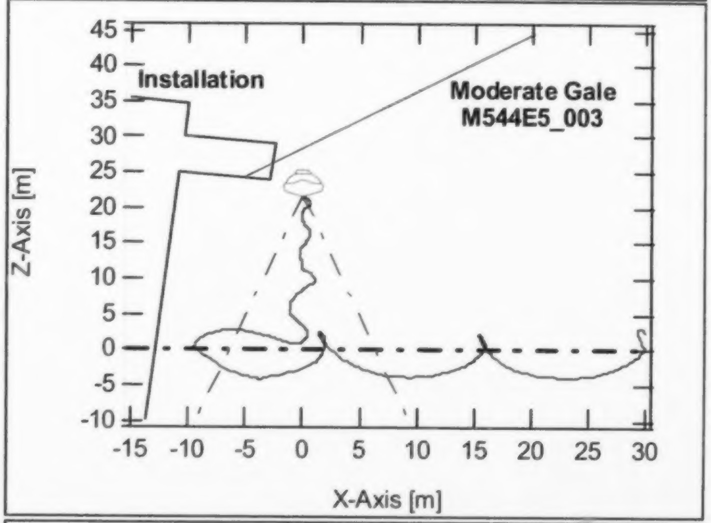
35
40
X-Axis [m]


Installation
Moderate Gale
M544E5_003
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Z-Axis [m]
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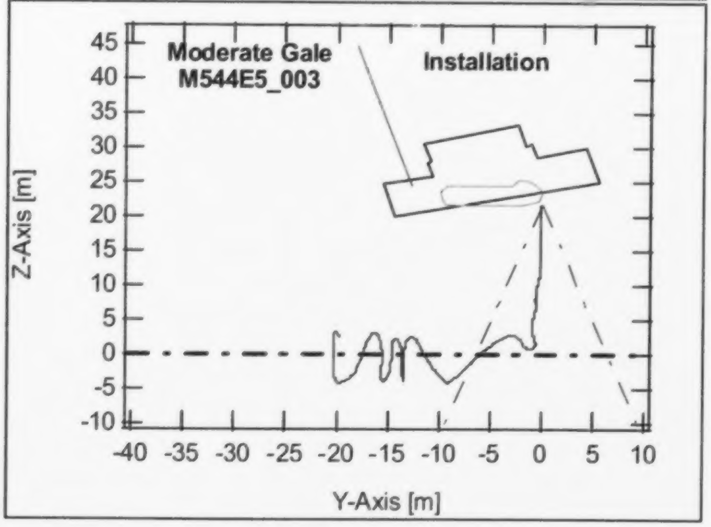
X-Axis [m]


Moderate Gale
M544E5_003
Installation
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0
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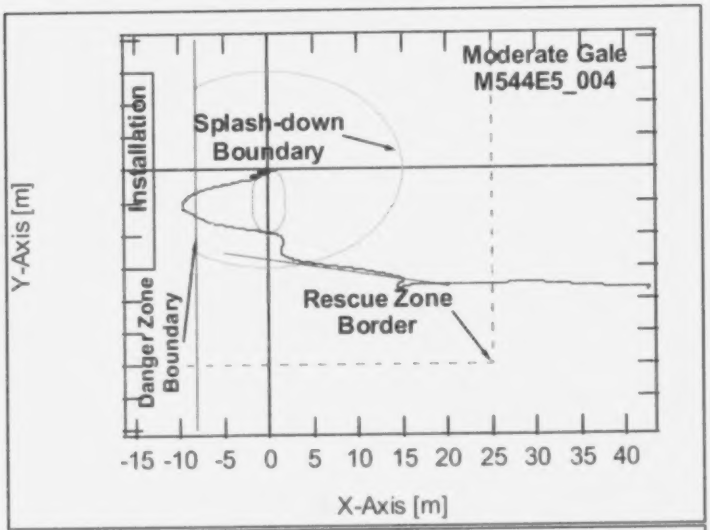
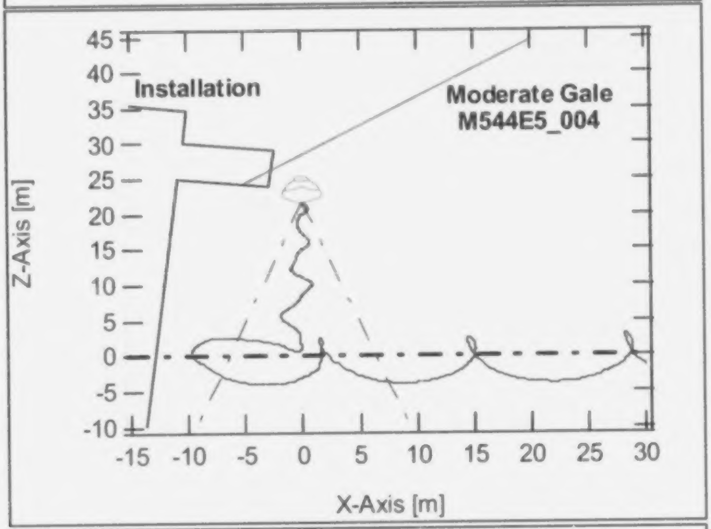
10
Y-Axis [m]


Moderate Gale
M544E5_004
Installation
Splash-down
Boundary
Y-Axis [m]
Danger Zone
Boundary
Rescue Zone
Border
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]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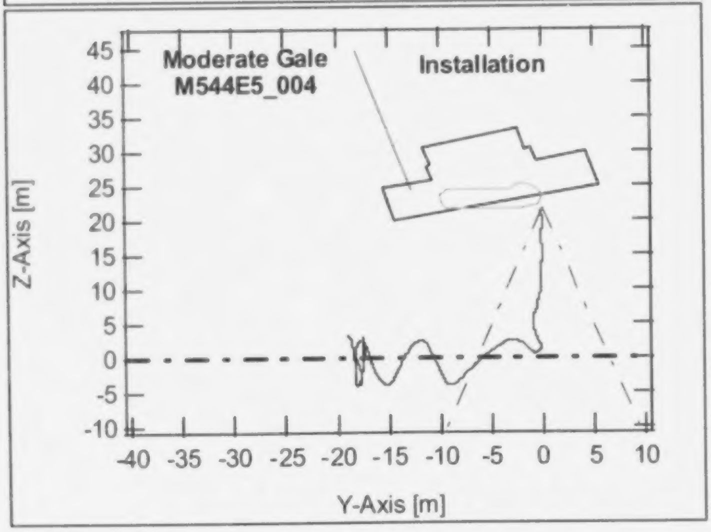
-10
Installation
Moderate Gale
M544E5_004
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]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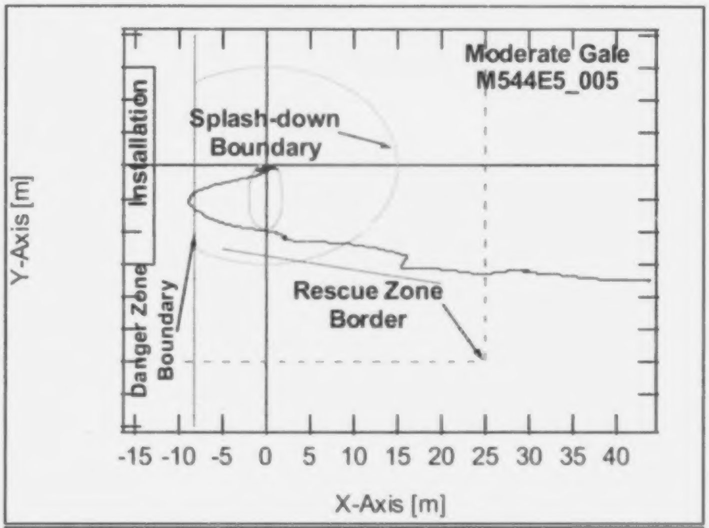
Moderate Gale
M544E5_004
Installation
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Gale
M544E5_005
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
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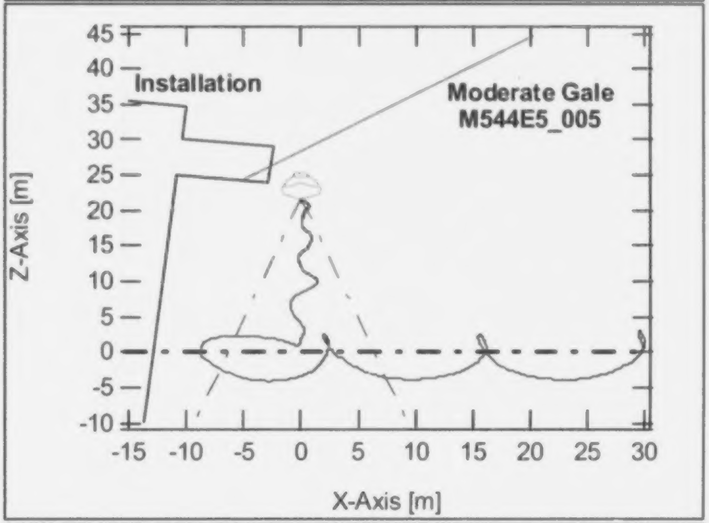
X-Axis [m]


Installation
Moderate Gale
M544E5_005
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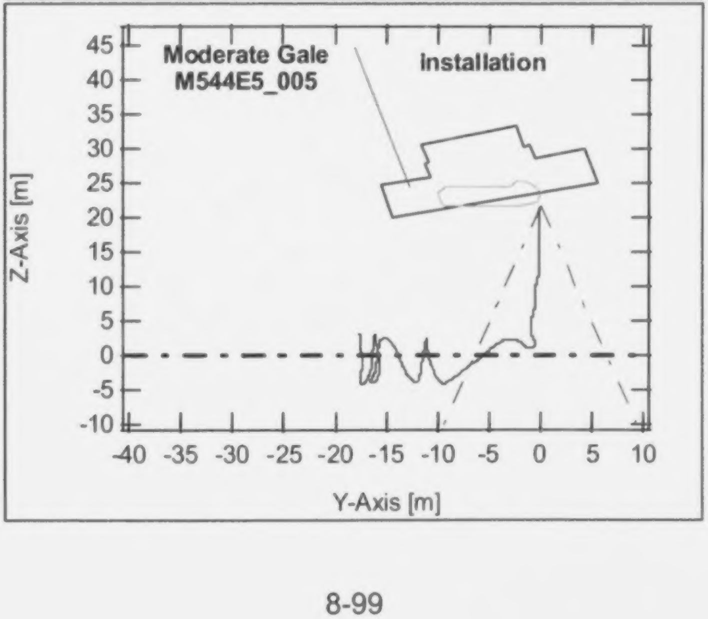
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544E5_005
Installation
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Z-Axis [m]
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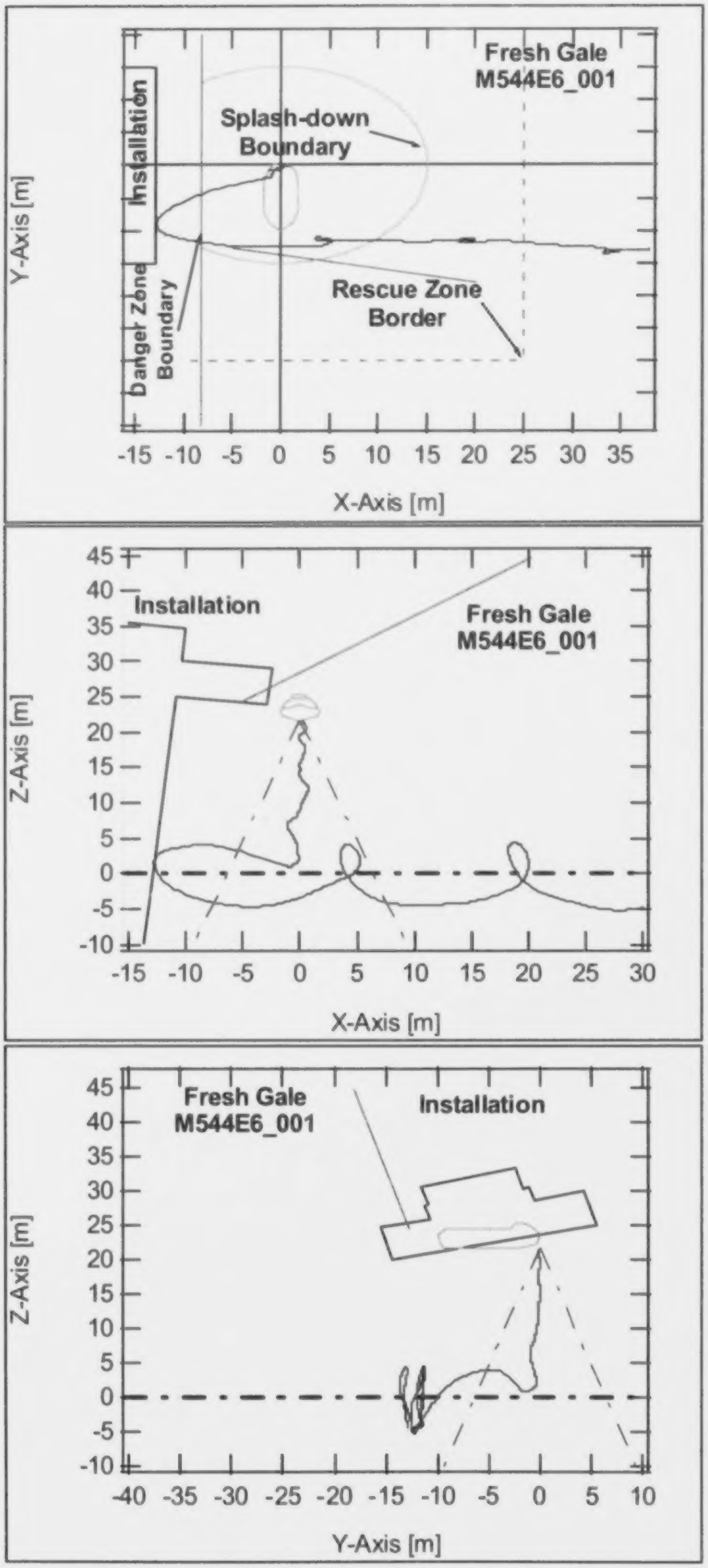
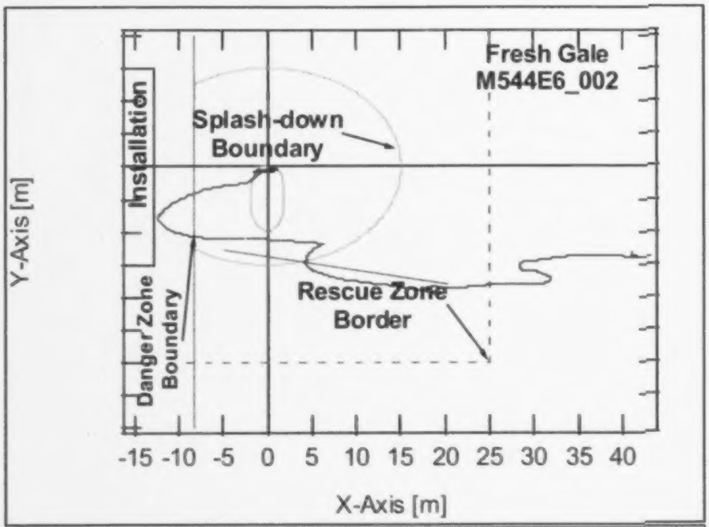
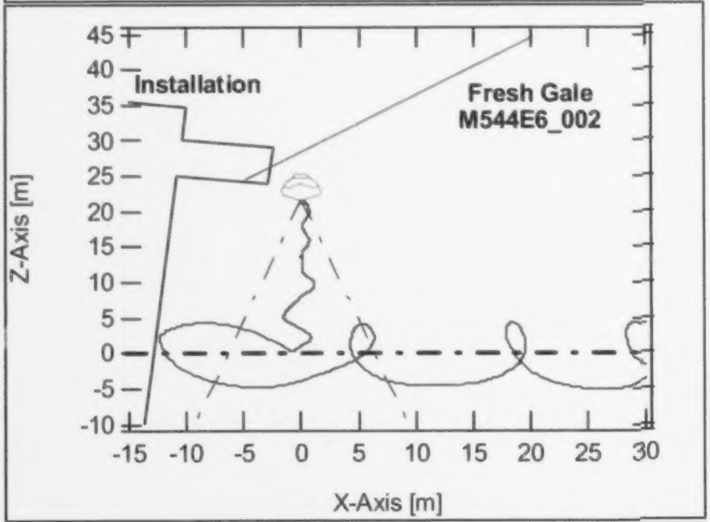
Y-Axis [m]


Fresh Gale
M544E6_001
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
X-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35
Installation
Fresh Gale
M544E6_001
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Fresh Gale
M544E6_001
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Gale
M544E6_002
Installation
Splash-down
Boundary
Y-Axis [m]
Danger Zone
Boundary
Rescue Zone
Border
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]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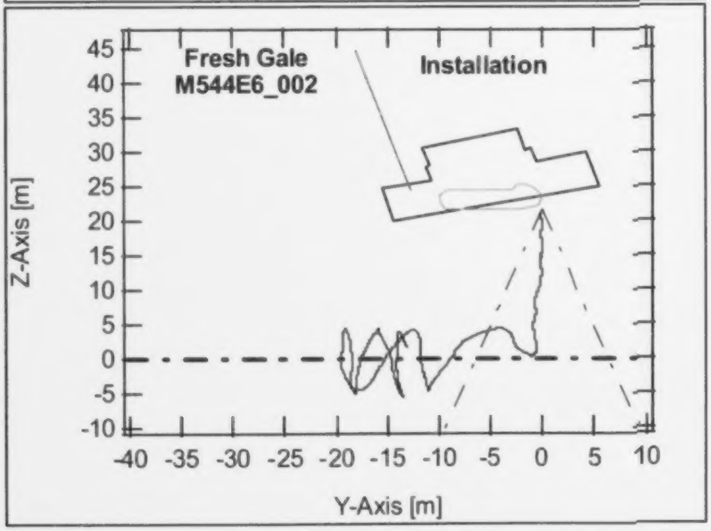
Installation
Fresh Gale
M544E6_002
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]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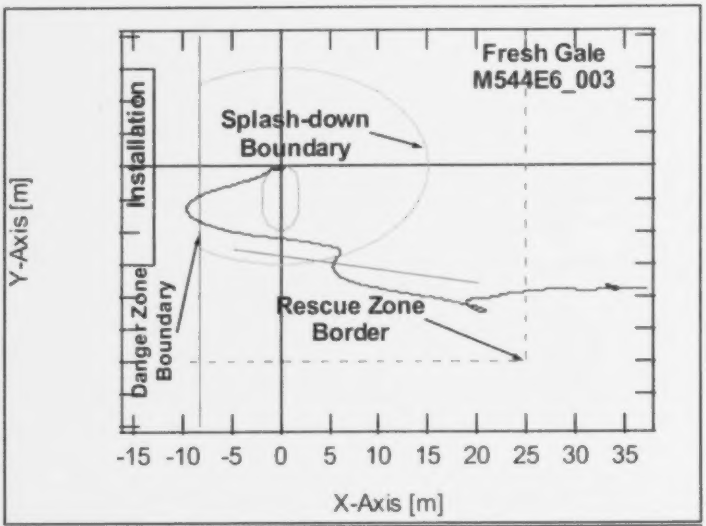
Fresh Gale
M544E6_002
Installation
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Gale
M544E6_003
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
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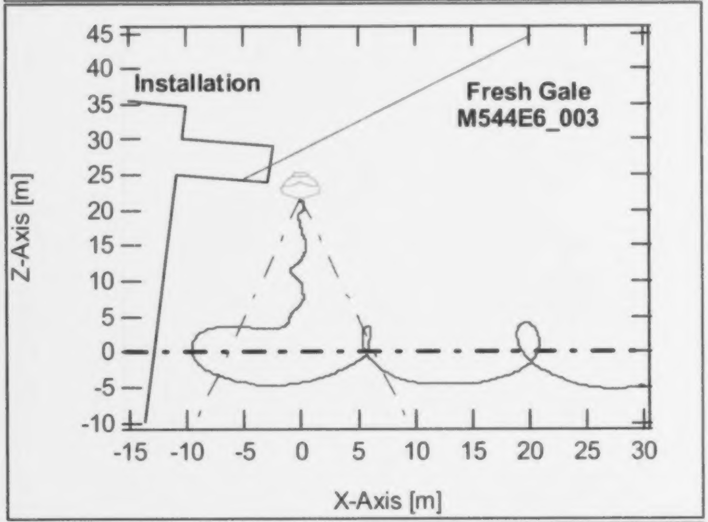
Installation
Fresh Gale
M544E6_003
Z-Axis [m]
X-Axis [m]
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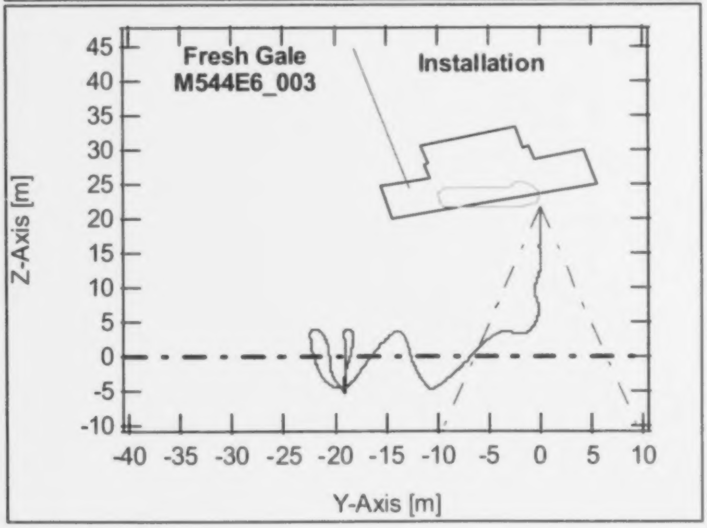
Fresh Gale
M544E6_003
Installation
Z-Axis [m]
Y-Axis [m]
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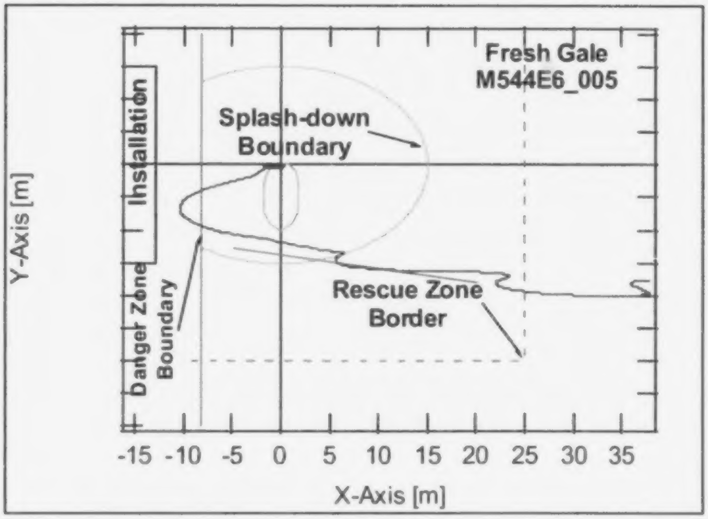
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M544E6_005
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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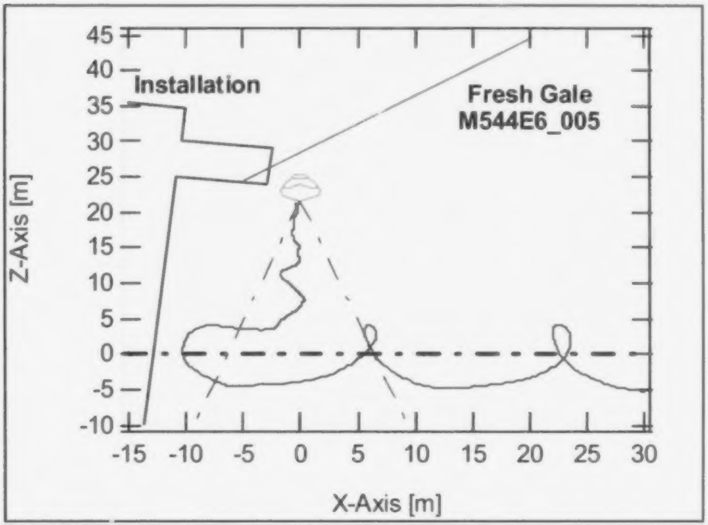
X-Axis [m]


Installation
Fresh Gale
M544E6_005
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-5
-10
Z-Axis [m]
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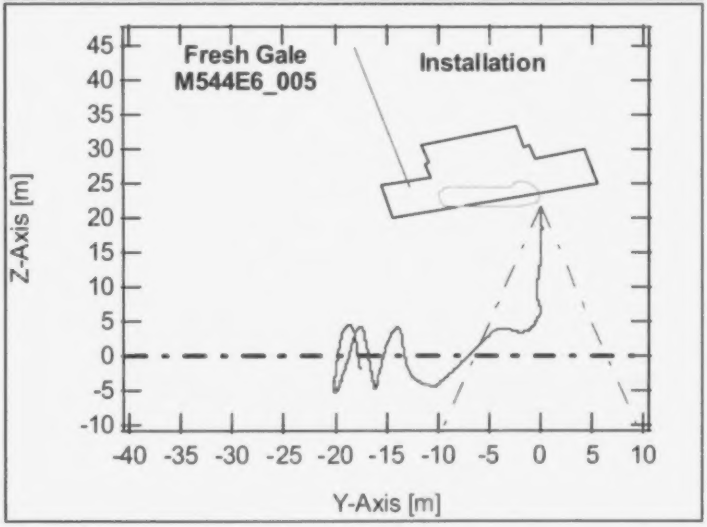
X-Axis [m]


Fresh Gale
M544E6_005
Installation
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Z-Axis [m]
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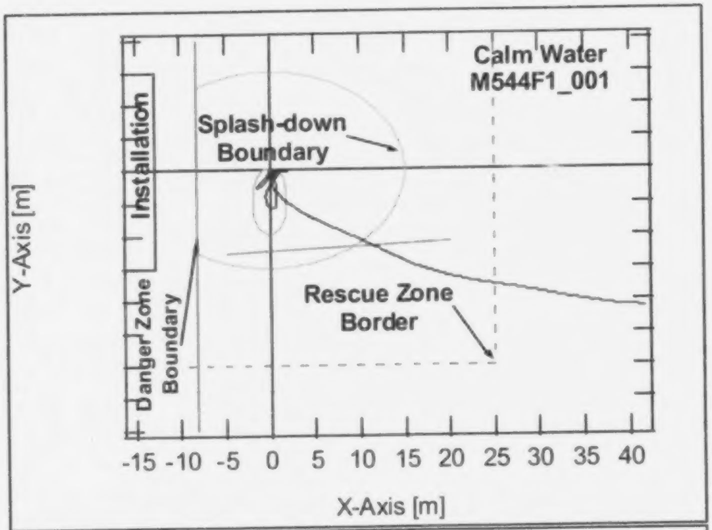
Y-Axis [m]


Calm Water
M544F1_001
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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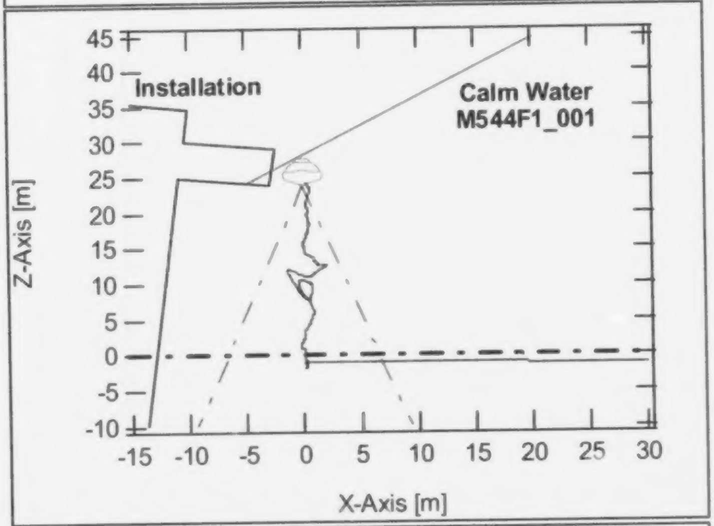
X-Axis [m]


Installation
Calm Water
M544F1_001
Z-Axis [m]
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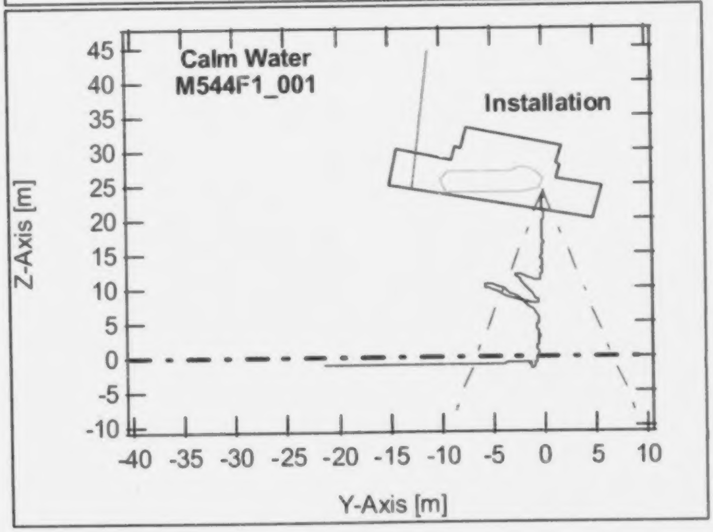
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544F1_001
Installation
Z-Axis [m]
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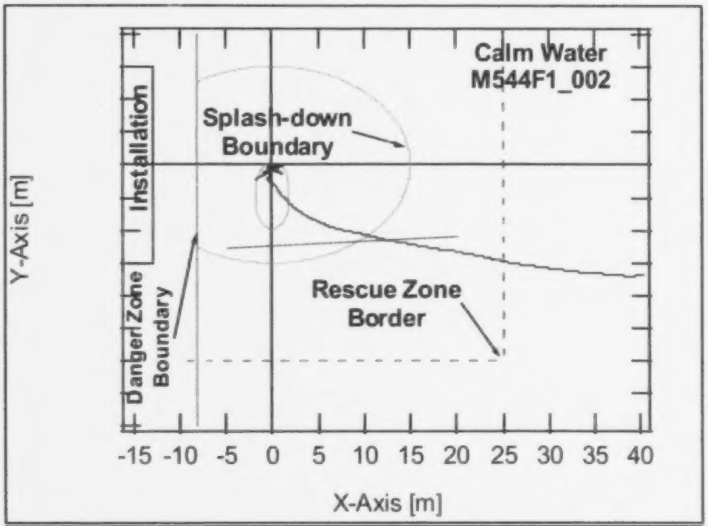
Y-Axis [m]


Calm Water
M544F1_002
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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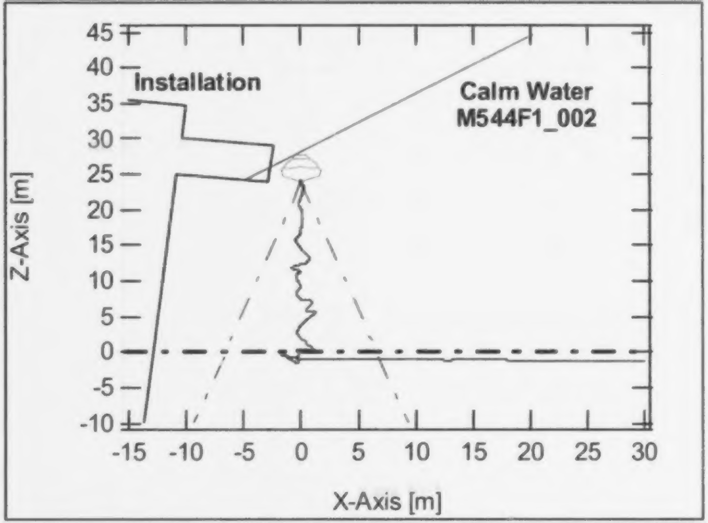
X-Axis [m]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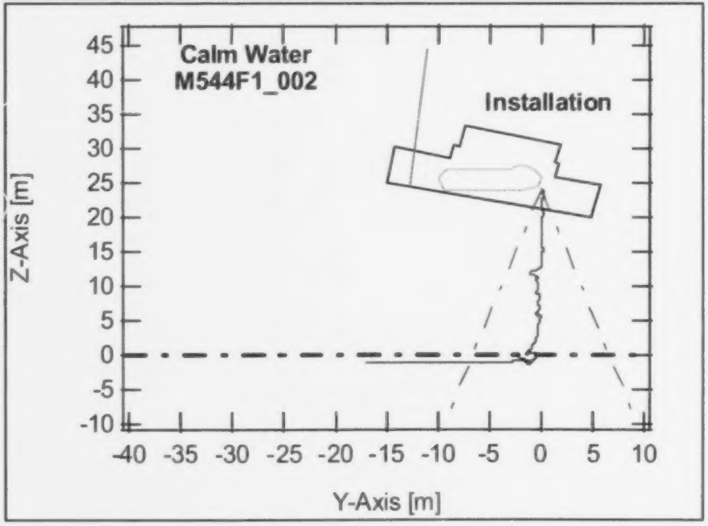
Installation
Calm Water
M544F1_002
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]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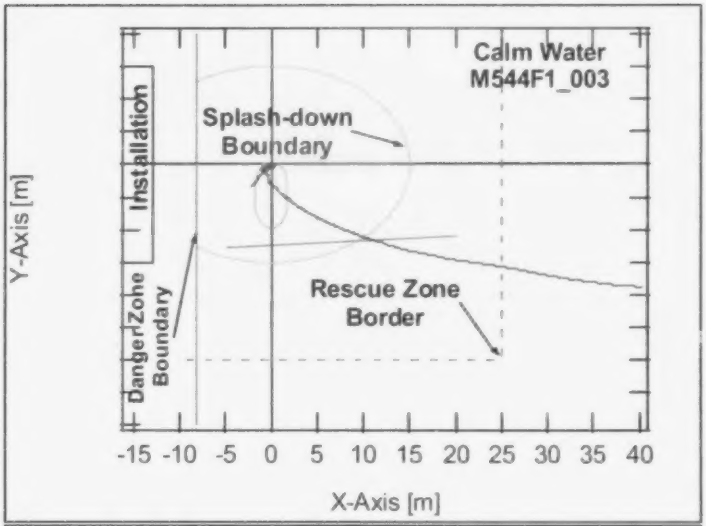
Calm Water
M544F1_002
Installation
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544F1_003
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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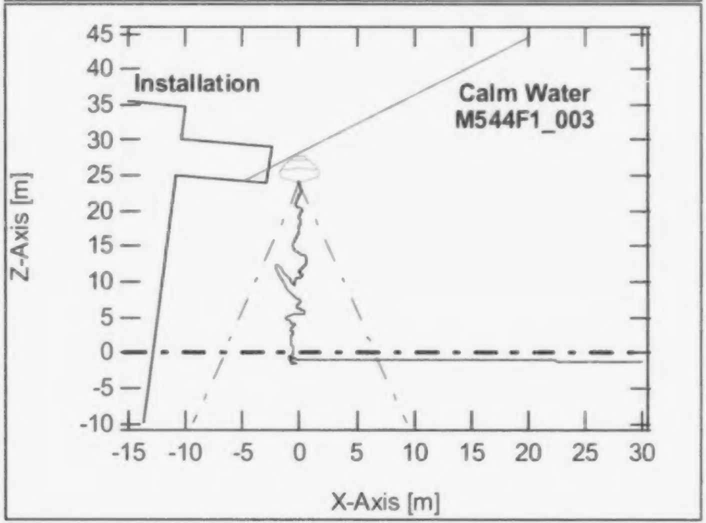
X-Axis [m]


Installation
Calm Water
M544F1_003
Z-Axis [m]
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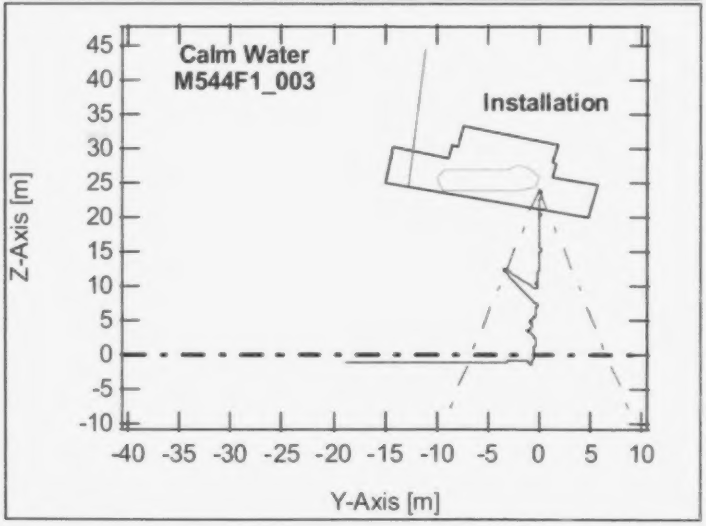
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544F1_003
Installation
Z-Axis [m]
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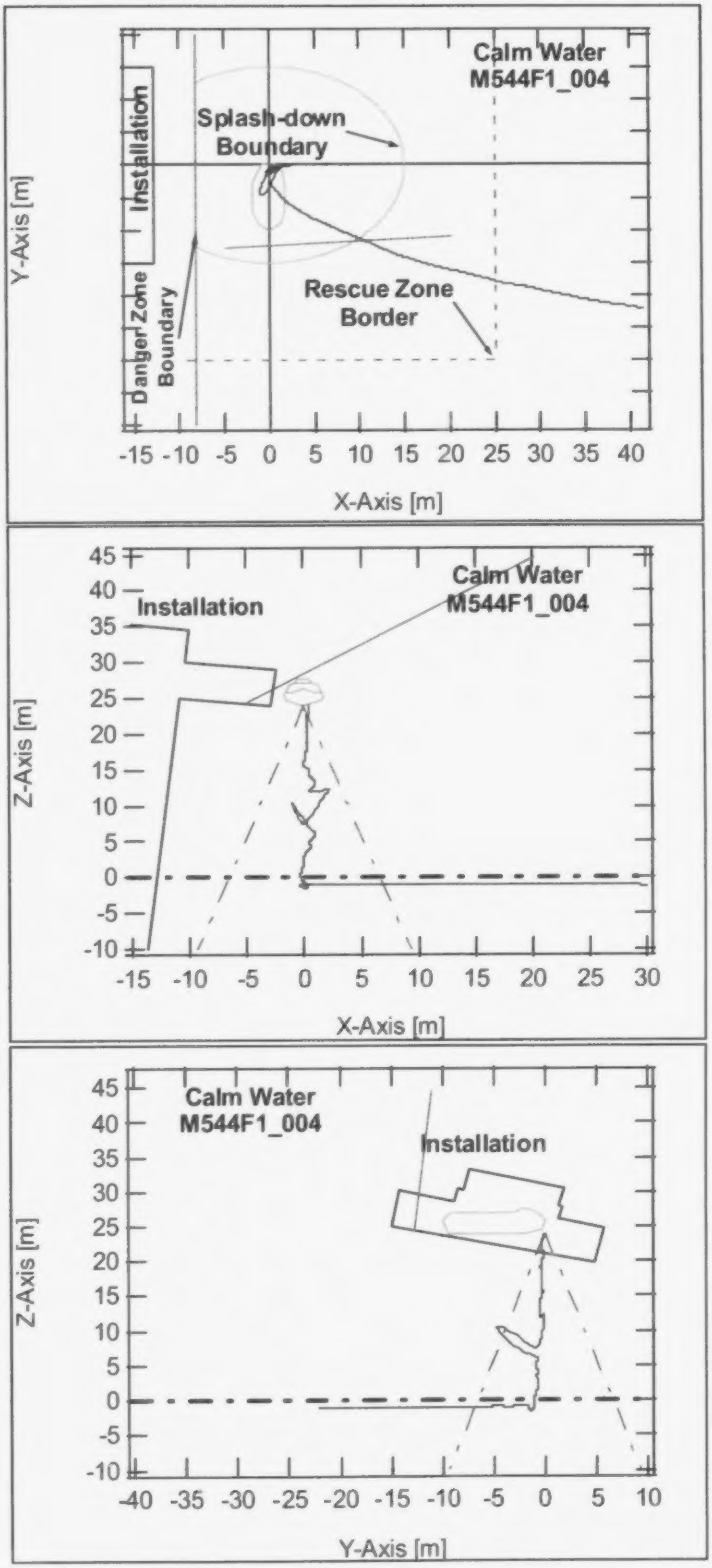
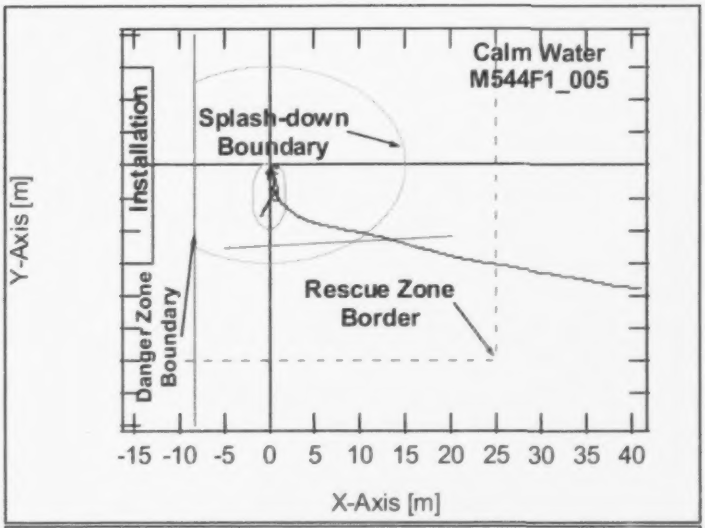
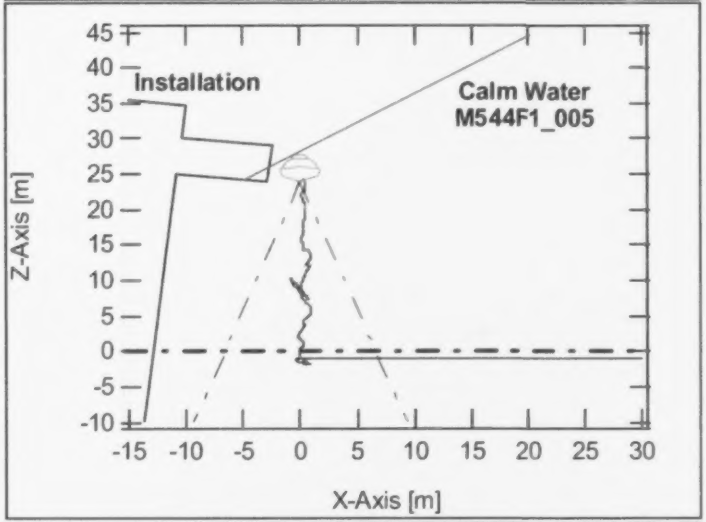
Y-Axis [m]


Calm Water
M544F1_004
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
Calm Water
M544F1_004
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Calm Water
M544F1_004
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544F1_005
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]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Installation
Calm Water
M544F1_005
Z-Axis [m]
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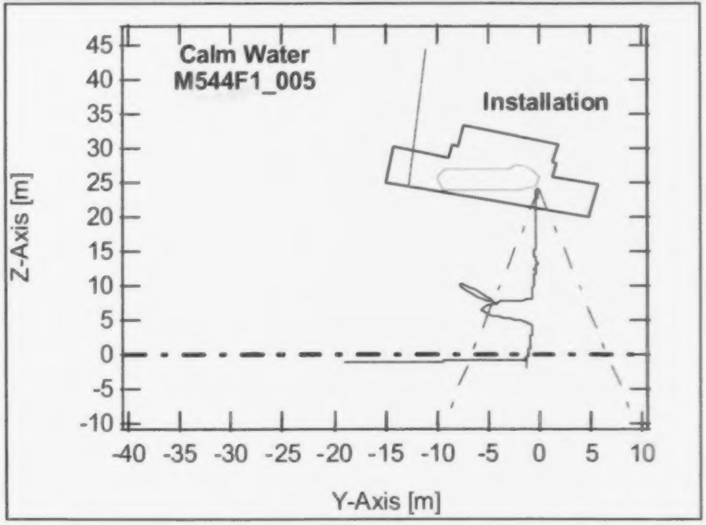
X-Axis [m]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M544F1_005
Installation
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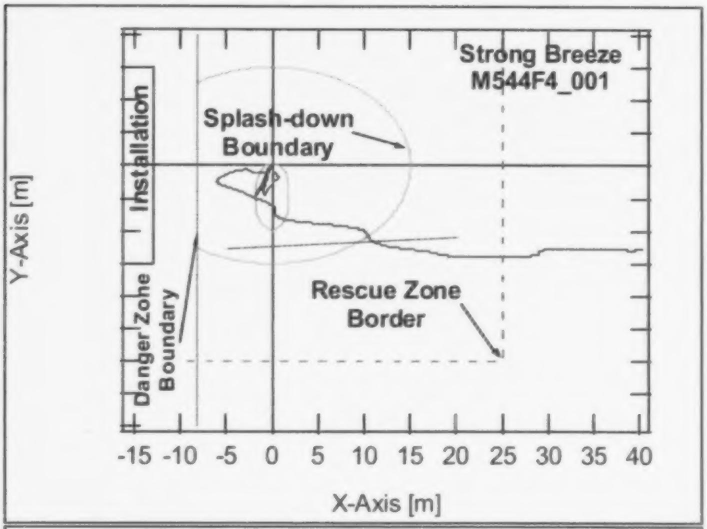
Y-Axis [m]


Strong Breeze
M544F4_001
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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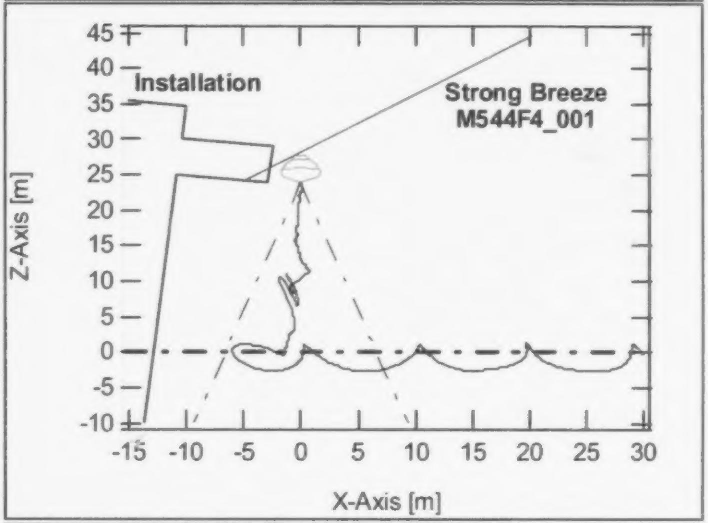
X-Axis [m]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Installation
Strong Breeze
M544F4_001
Z-Axis [m]
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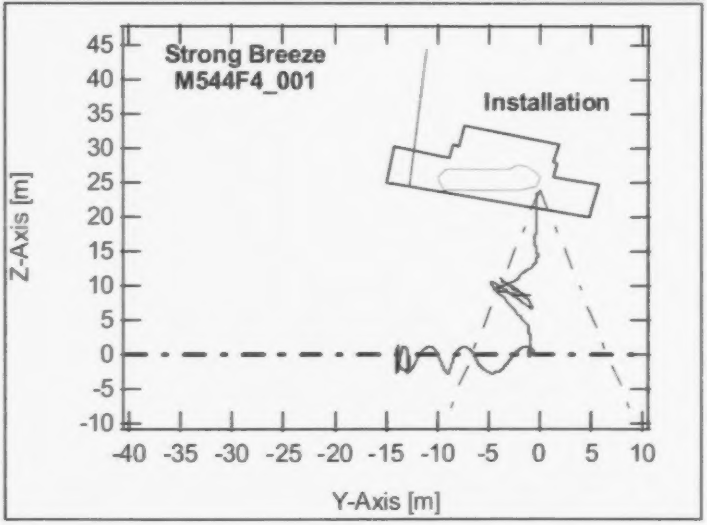
X-Axis [m]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Strong Breeze
M544F4_001
Installation
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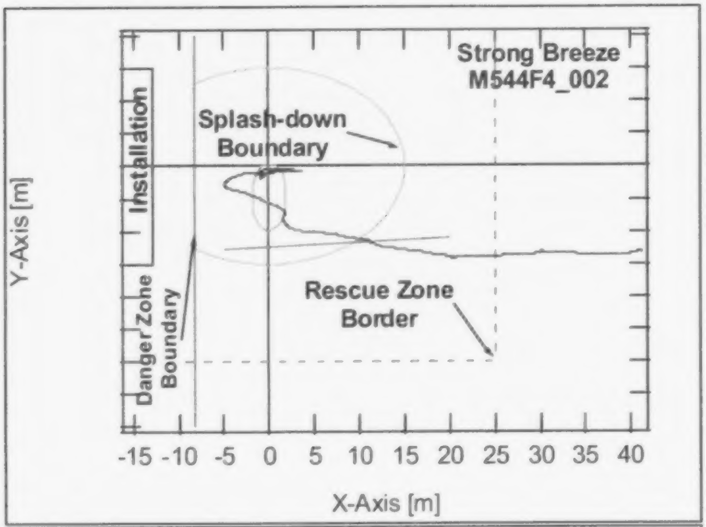
Y-Axis [m]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M544F4_002
Installation
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Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
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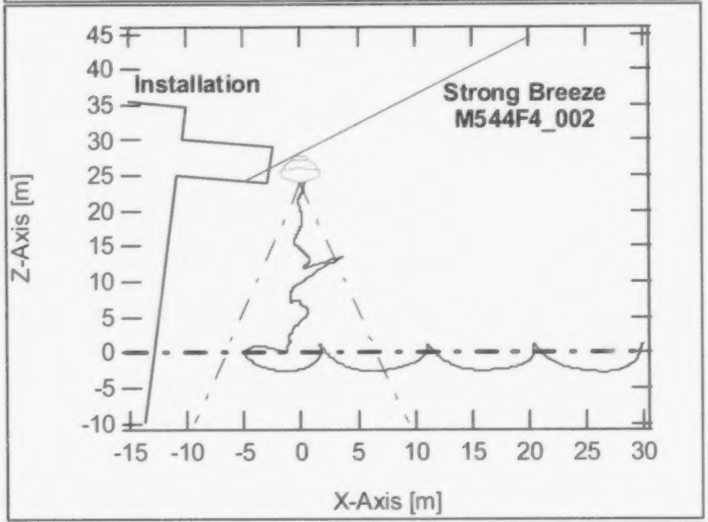
X-Axis [m]


Installation
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M544F4_002
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Z-Axis [m]
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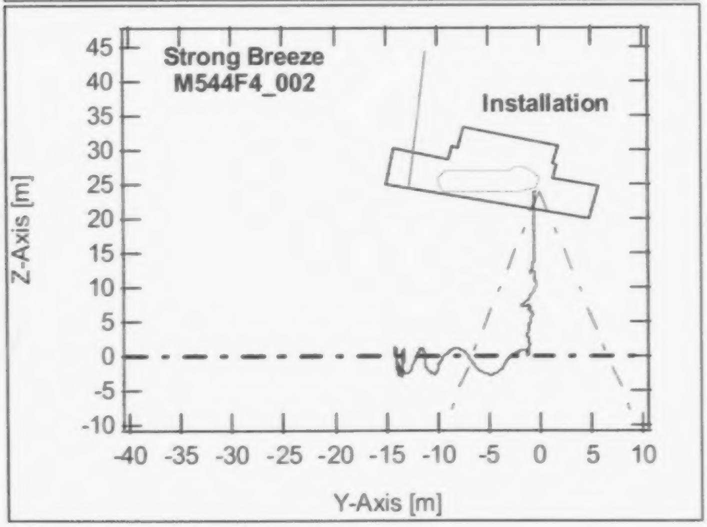
X-Axis [m]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M544F4_002
Installation
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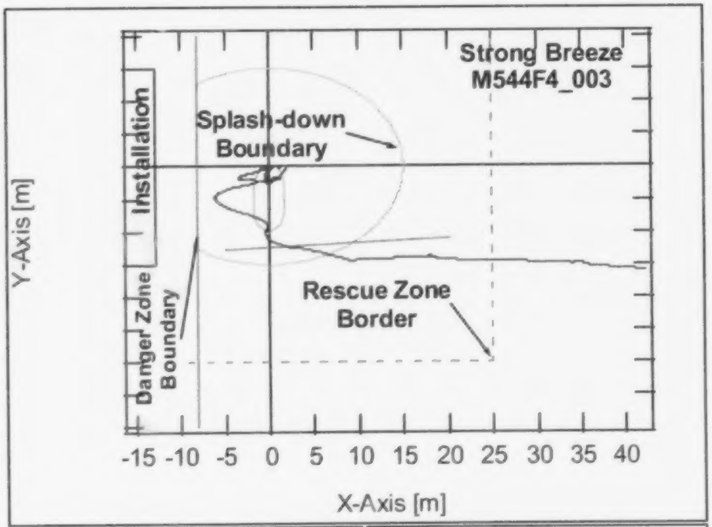
Y-Axis [m]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Installation
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Danger Zone
Boundary
Rescue Zone
Border
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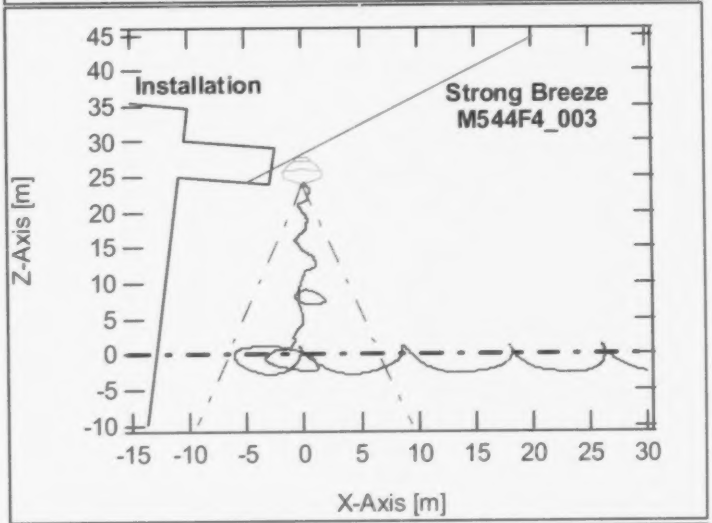
X-Axis [m]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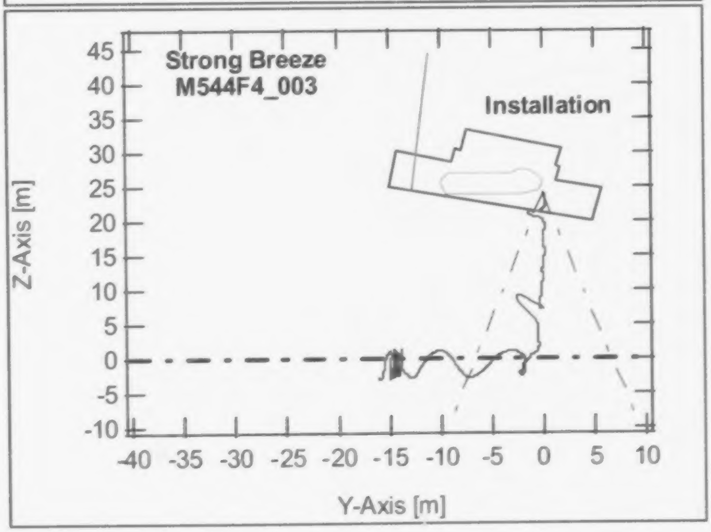
Installation
Strong Breeze
M544F4_003
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]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Strong Breeze
M544F4_003
Installation
Z-Axis [m]
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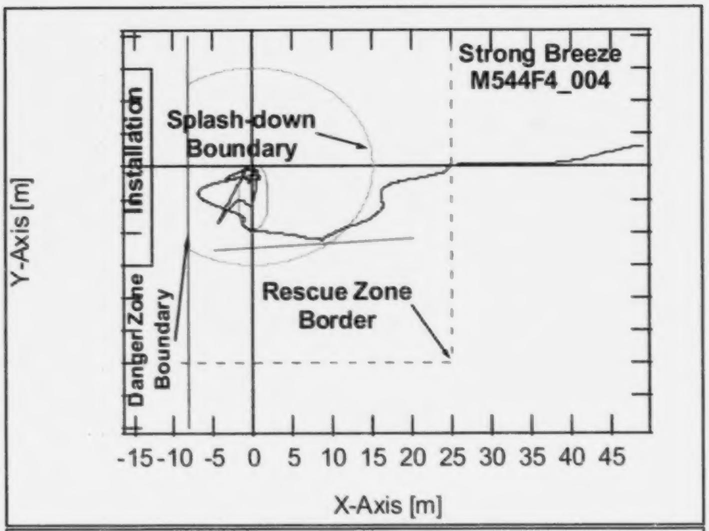
Y-Axis [m]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M544F4_004
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
X-Axis [m]
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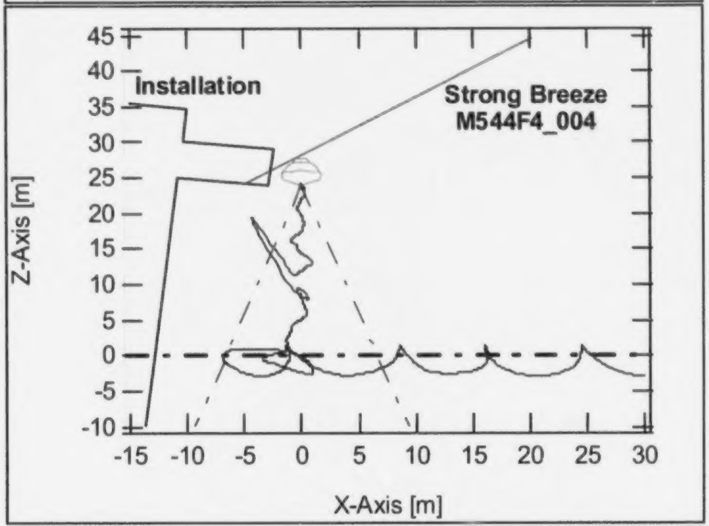
Installation
Strong Breeze
M544F4_004
Z-Axis [m]
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X-Axis [m]
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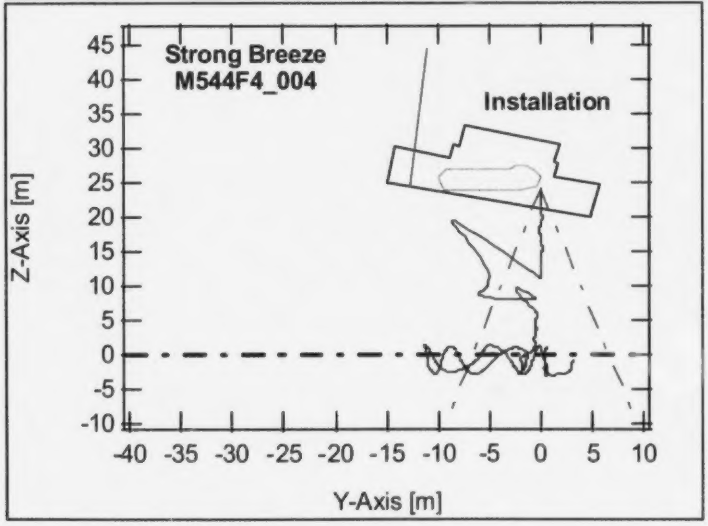
Strong Breeze
M544F4_004
Installation
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Y-Axis [m]
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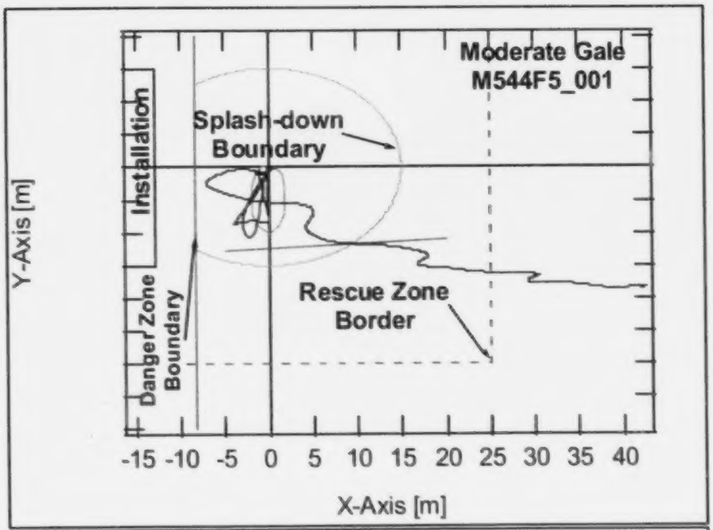
Moderate Gale
M544F5_001
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
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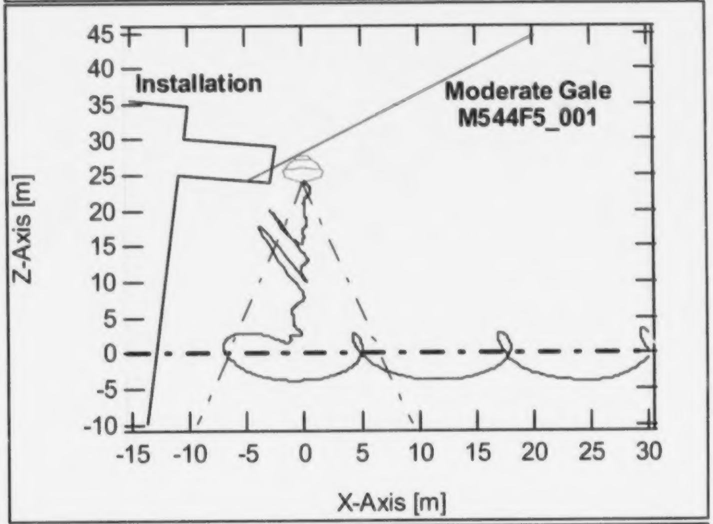
X-Axis [m]


Installation
Moderate Gale
M544F5_001
Z-Axis [m]
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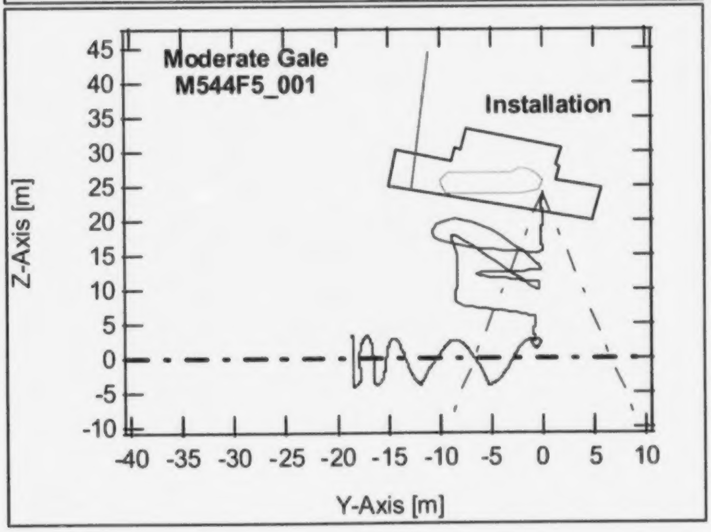
X-Axis [m]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M544F5_001
Installation
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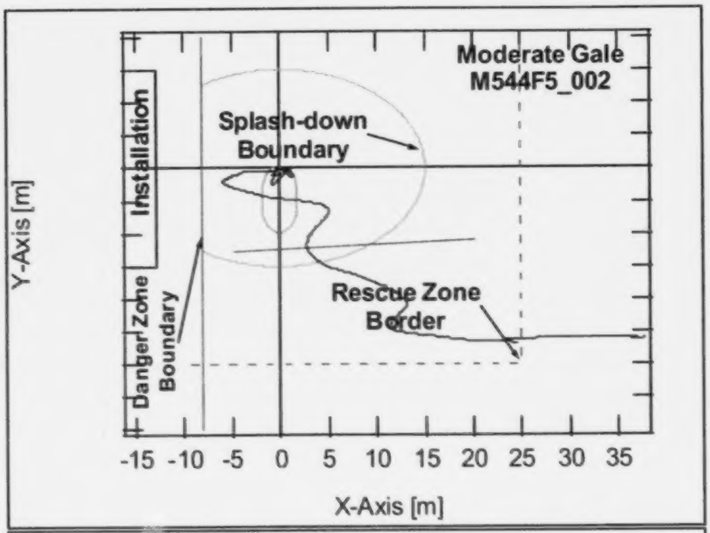
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]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M544F5_002
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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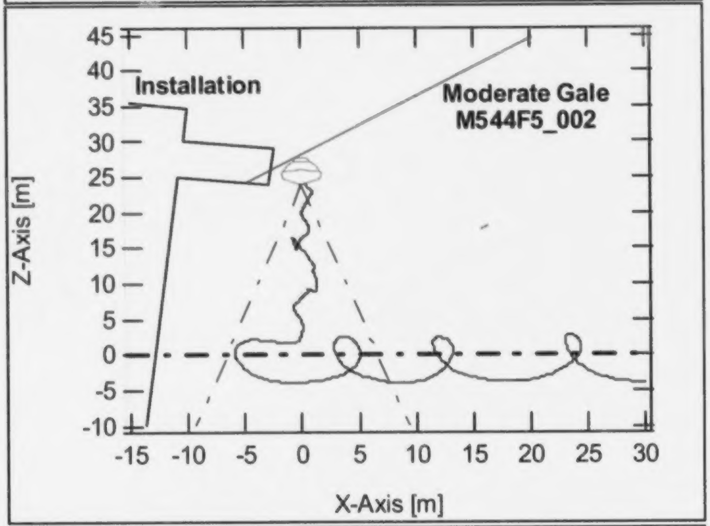
X-Axis [m]


Installation
Moderate Gale
M544F5_002
Z-Axis [m]
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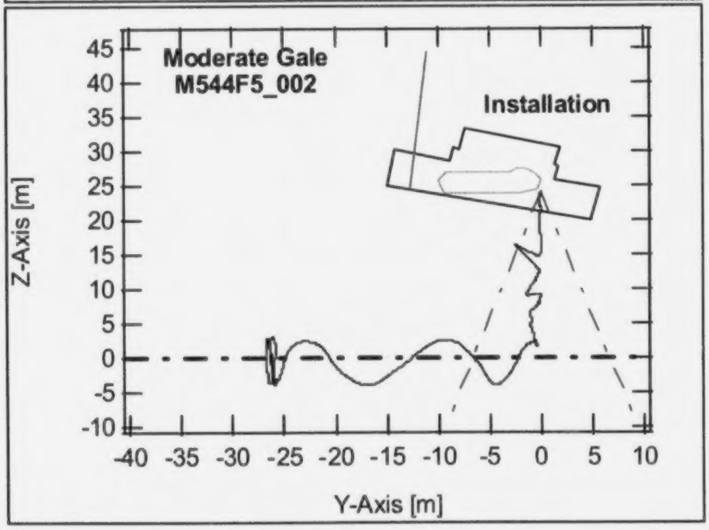
X-Axis [m]


Moderate Gale
M544F5_002
Installation
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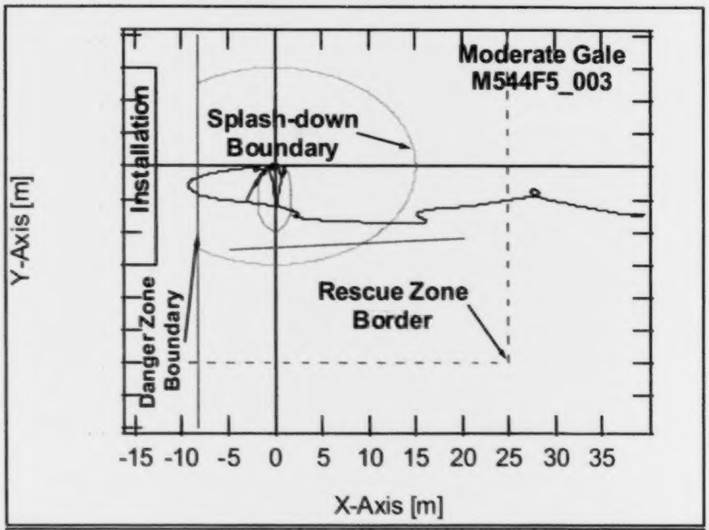
Y-Axis [m]


Moderate Gale
M544F5_003
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
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-10
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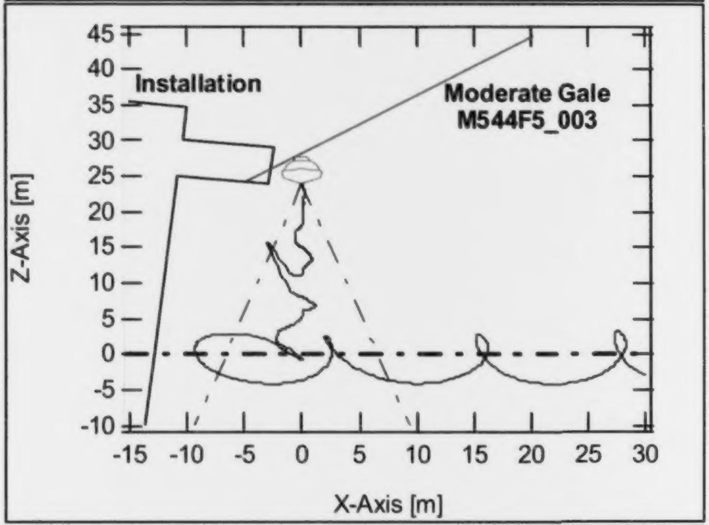
Installation
Moderate Gale
M544F5_003
Z-Axis [m]
X-Axis [m]
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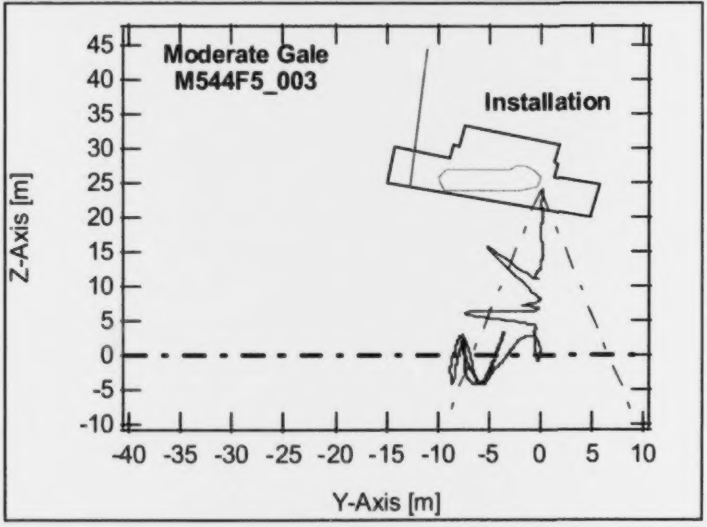
Moderate Gale
M544F5_003
Installation
Z-Axis [m]
Y-Axis [m]
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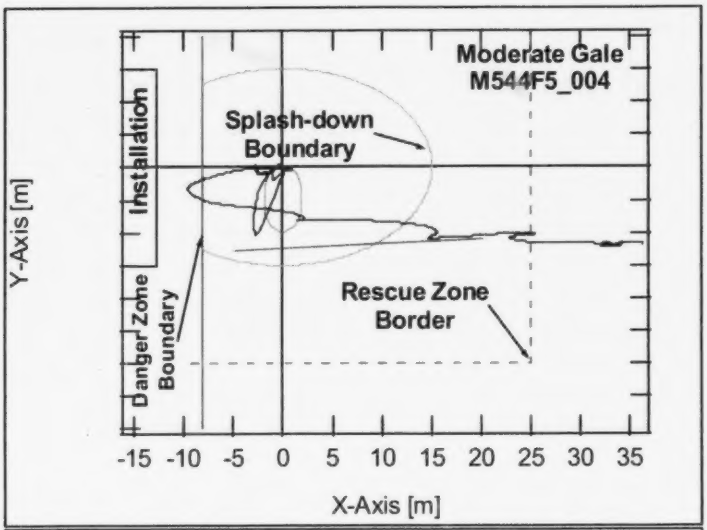
Moderate Gale
M544F5_004
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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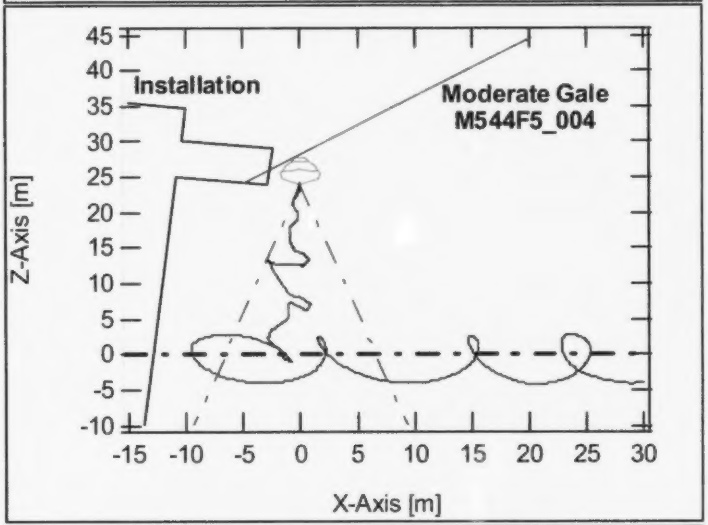
X-Axis [m]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Installation
Moderate Gale
M544F5_004
Z-Axis [m]
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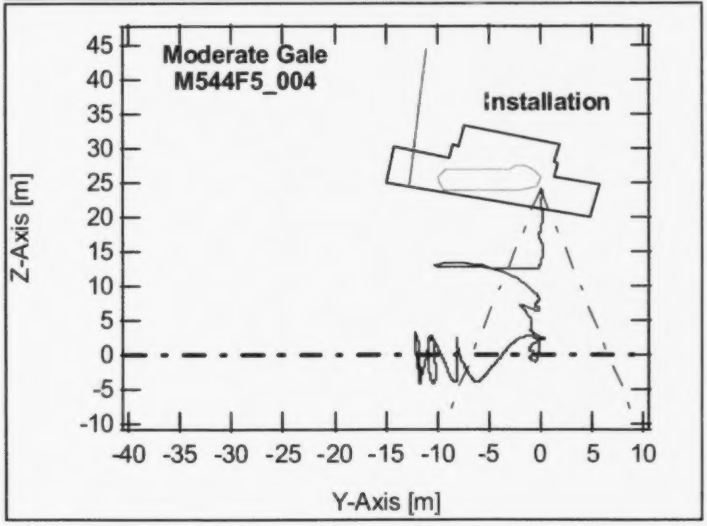
X-Axis [m]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Moderate Gale
M544F5_004
Installation
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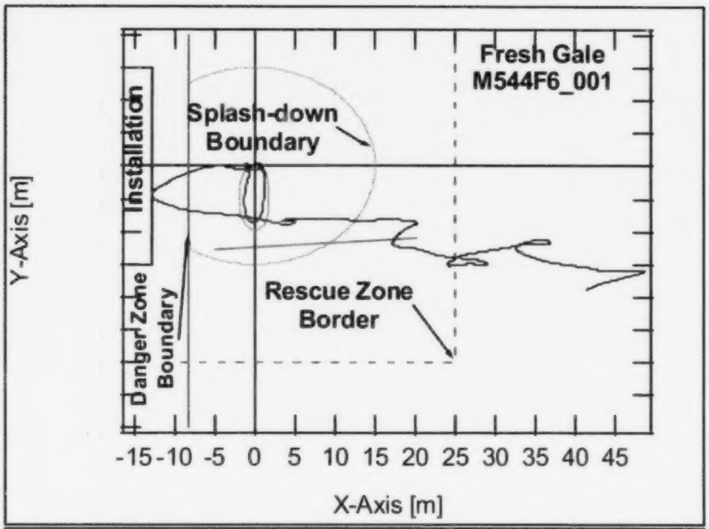
Y-Axis [m]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M544F6_001
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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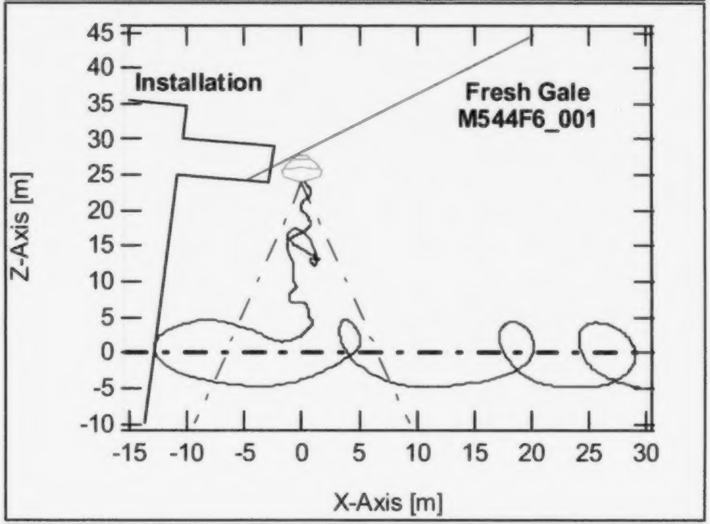
X-Axis [m]


Installation
Fresh Gale
M544F6_001
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Z-Axis [m]
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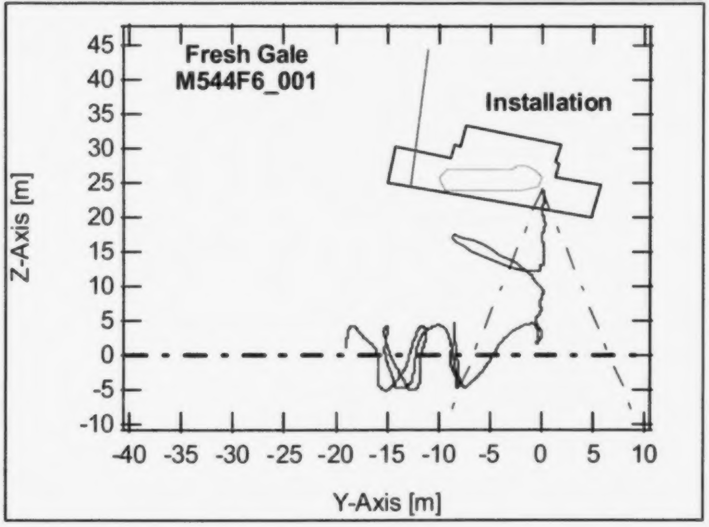
Fresh Gale
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Installation
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Z-Axis [m]
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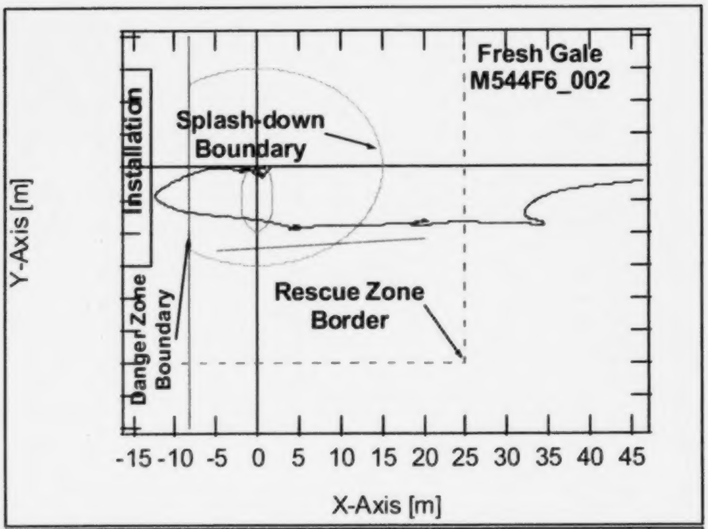
Y-Axis [m]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Installation
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Rescue Zone
Border
Danger Zone
Boundary
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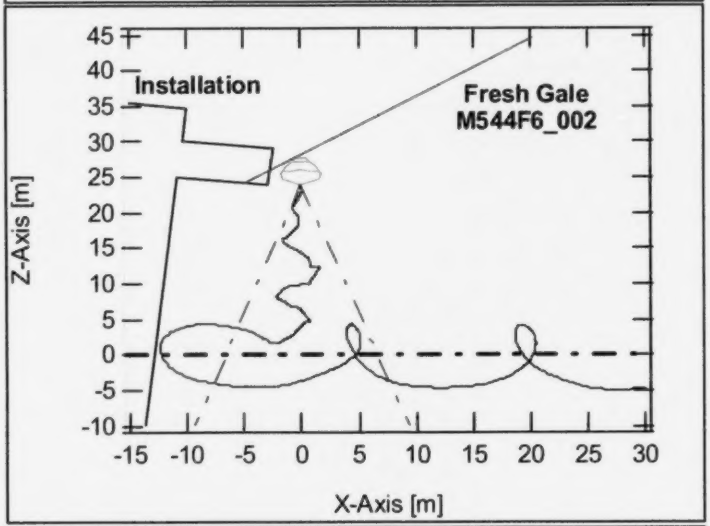
Installation
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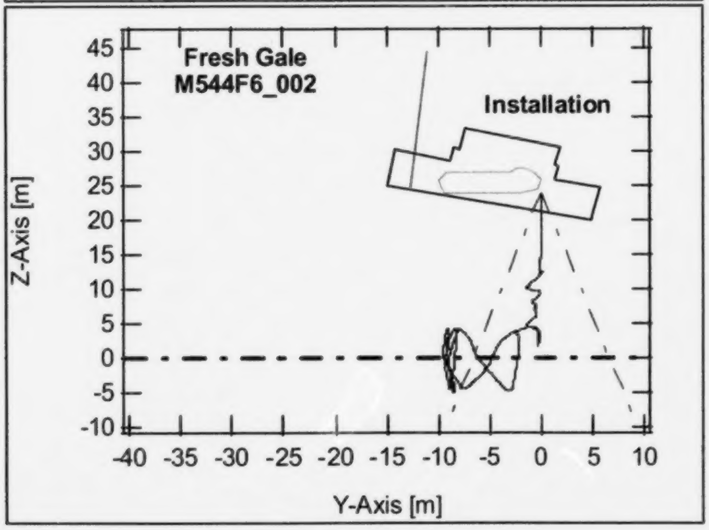
Fresh Gale
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Installation
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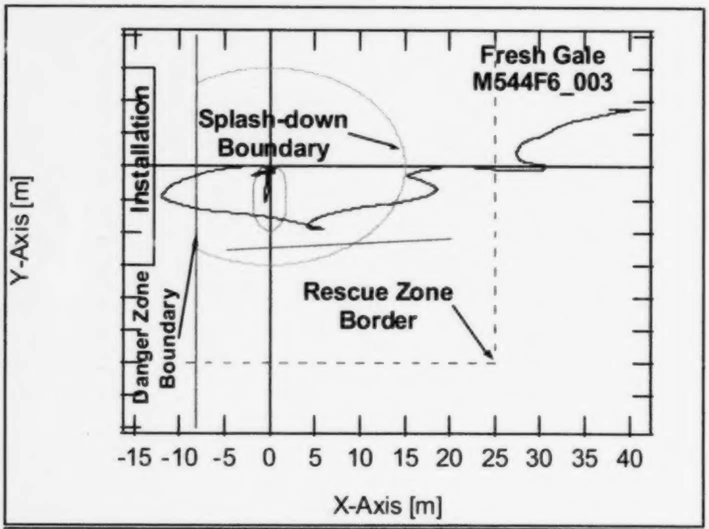
Y-Axis [m]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M544F6_003
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
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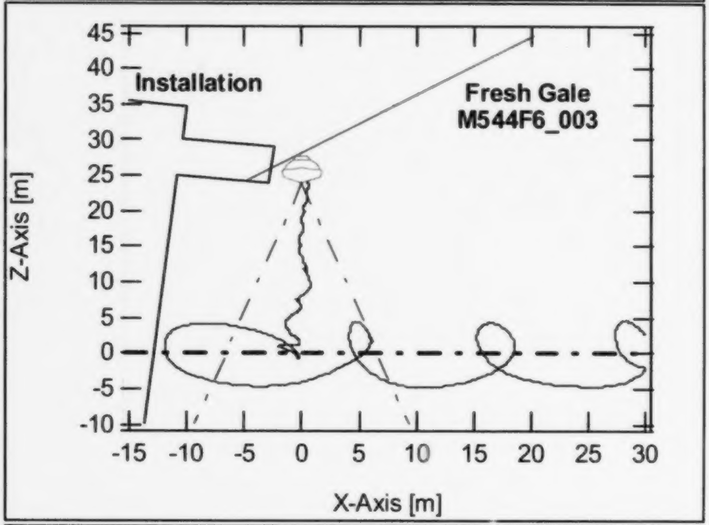
X-Axis [m]


Installation
Fresh Gale
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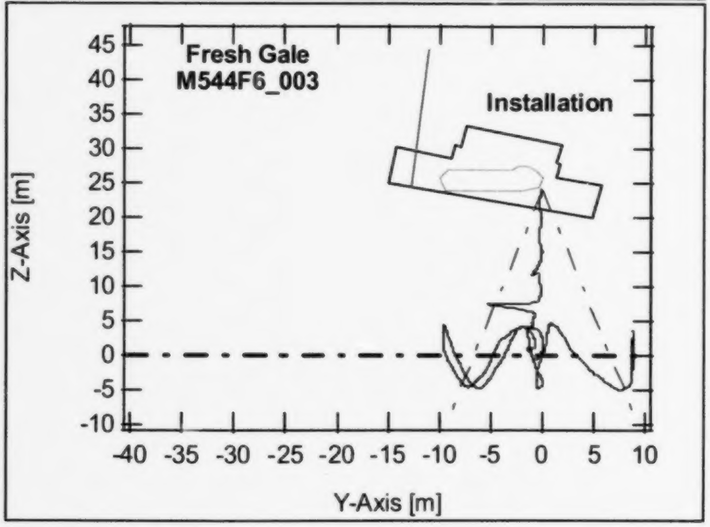
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Installation
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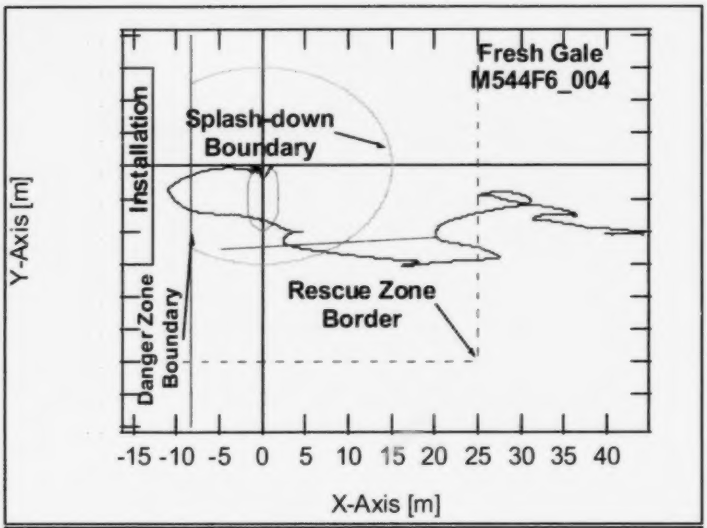
Fresh Gale
M544F6_004
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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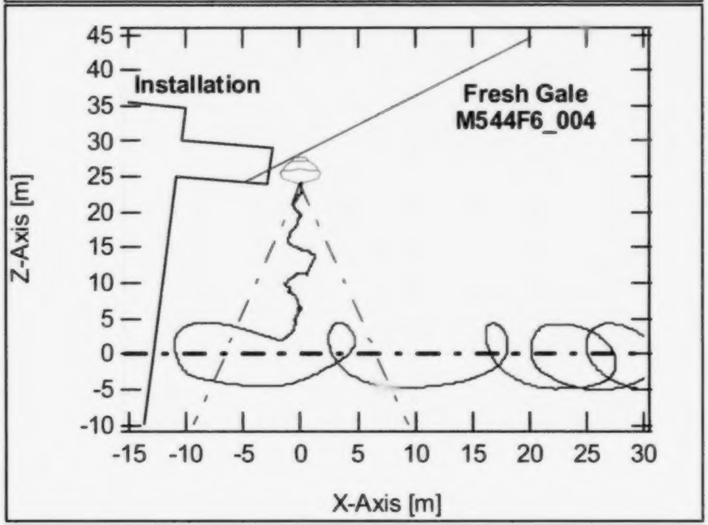
X-Axis [m]


Installation
Fresh Gale
M544F6_004
Z-Axis [m]
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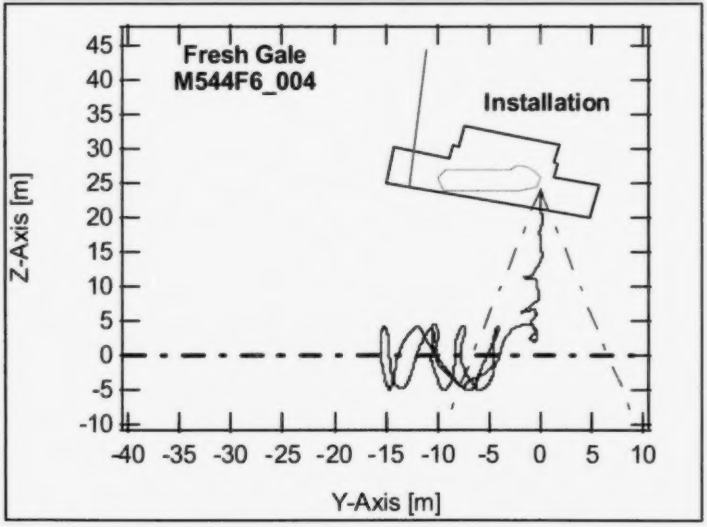
X-Axis [m]


Fresh Gale
M544F6_004
Installation
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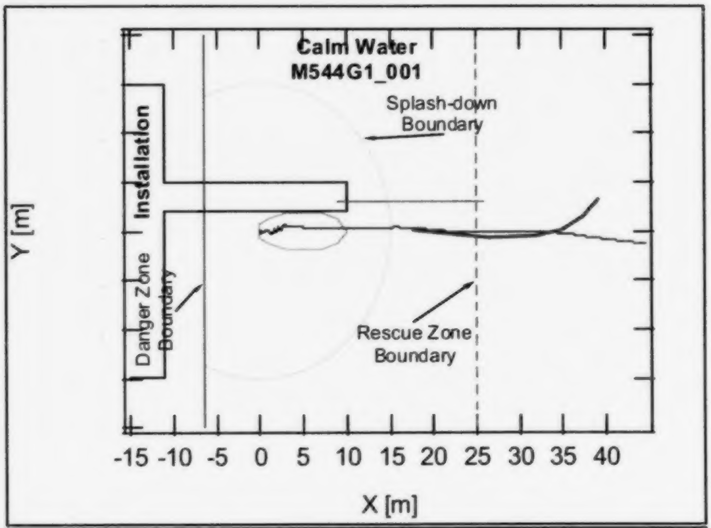
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544G1_001
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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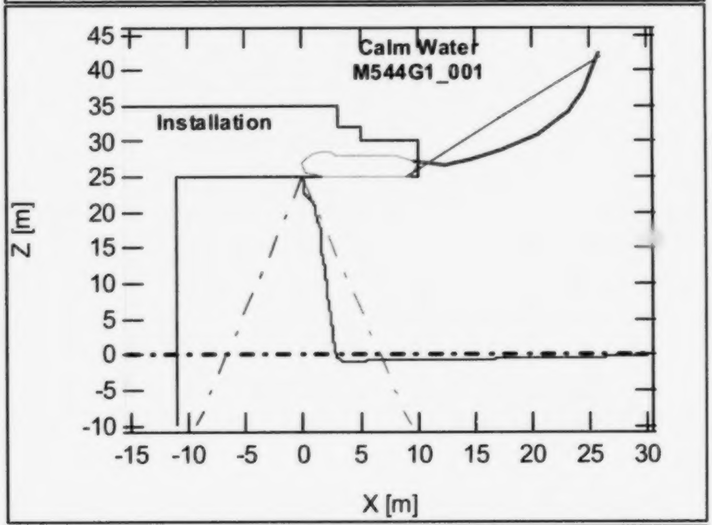
X [m]


Calm Water
M544G1_001
Installation
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Z [m]
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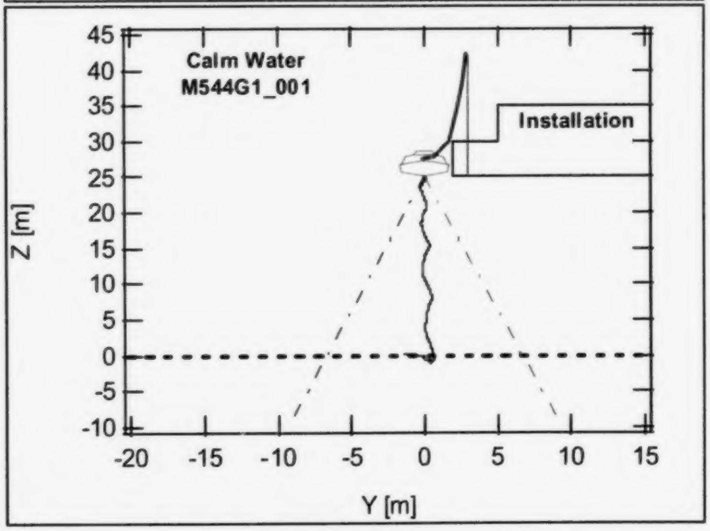
X [m]


Calm Water
M544G1_001
Installation
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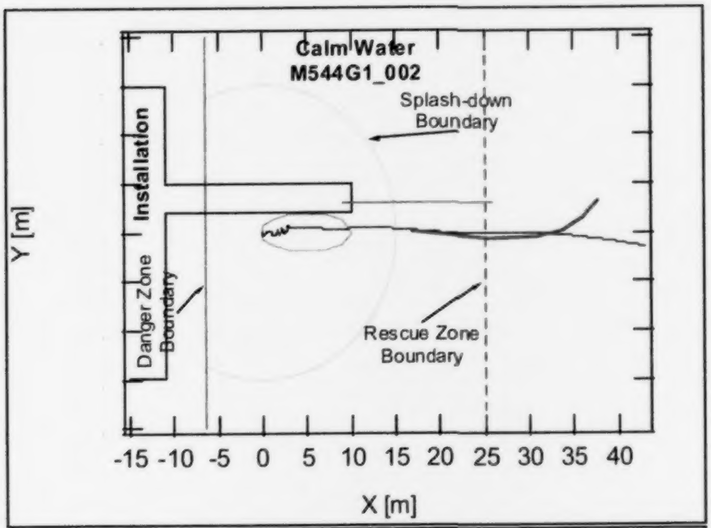
Y [m]


Calm Water
M544G1_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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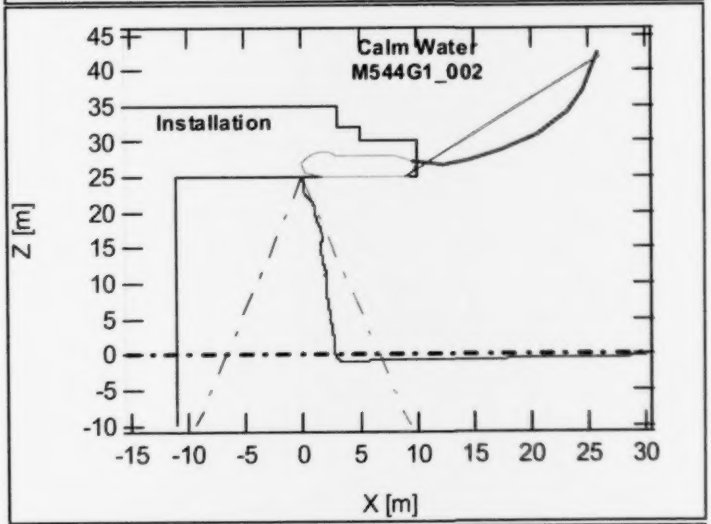
X [m]


Calm Water
M544G1_002
Installation
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-10
Z [m]
-15
-10
-5
0
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25
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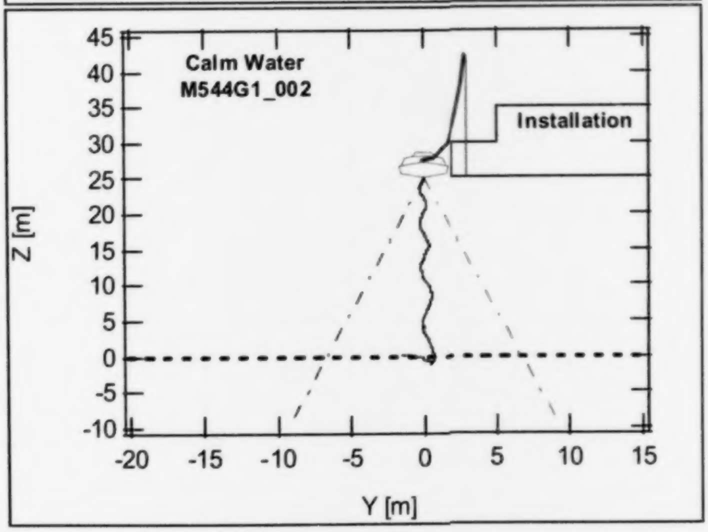
X [m]


Calm Water
M544G1_002
Installation
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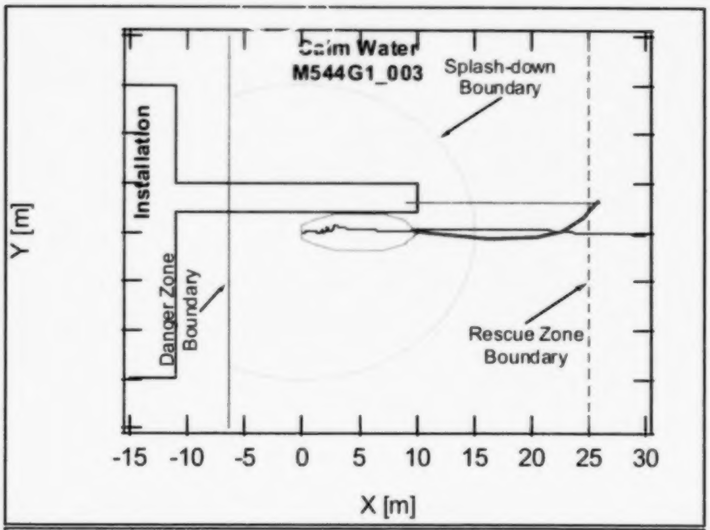
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M544G1_003
Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
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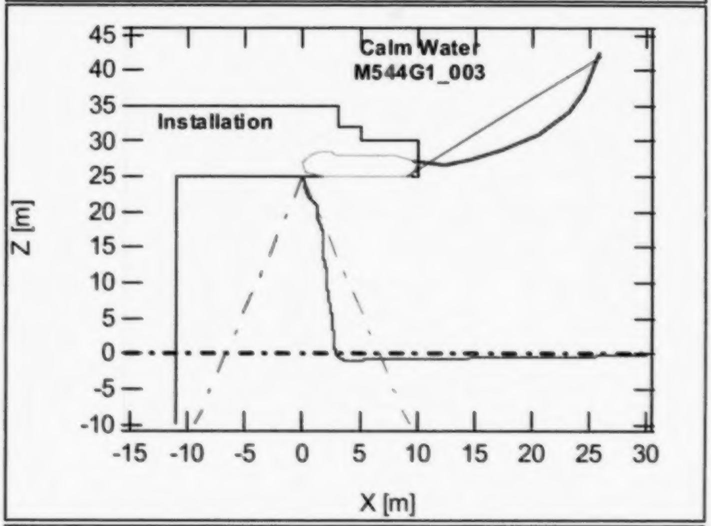
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Installation
Z [m]
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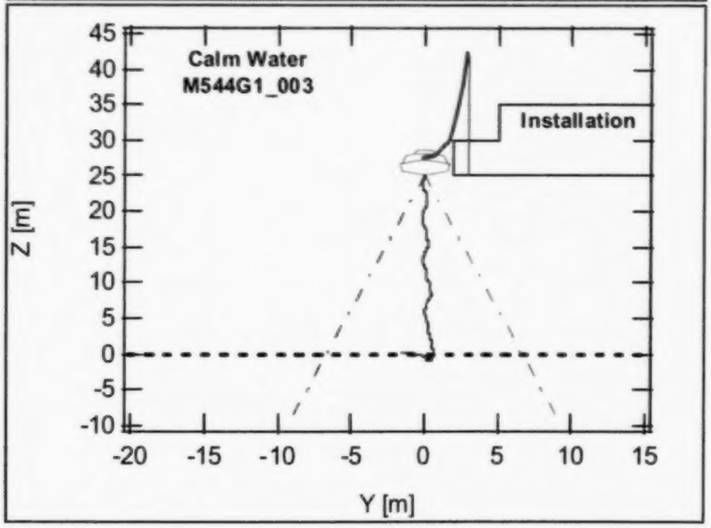
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M544G1_003
Installation
Z [m]
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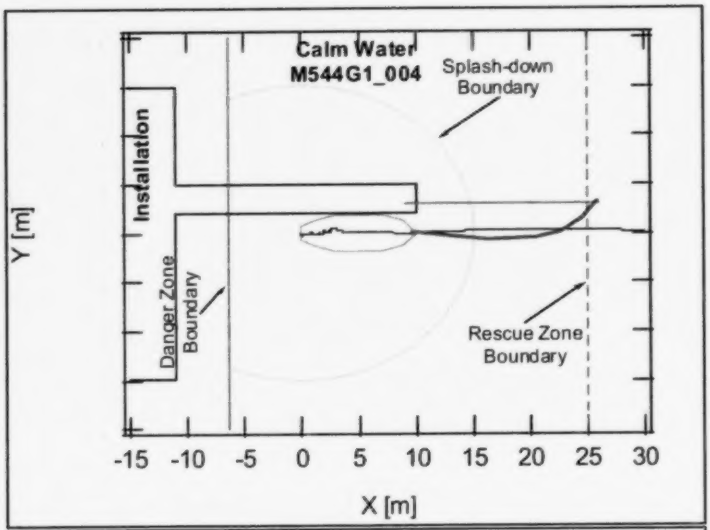
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Splash-down Boundary
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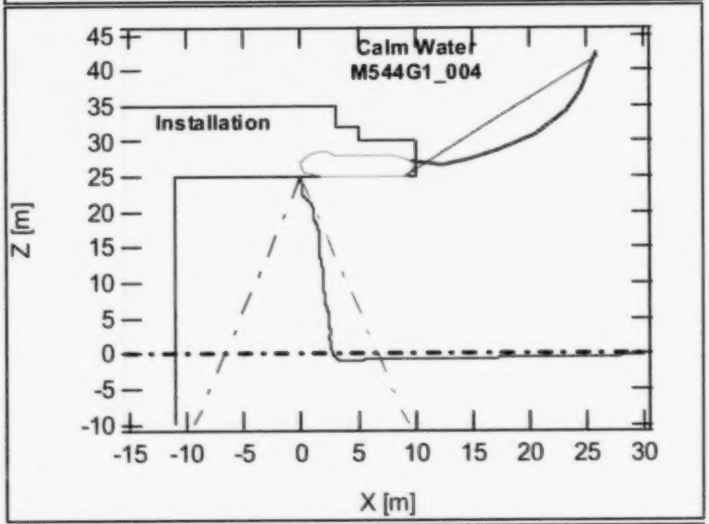
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Installation
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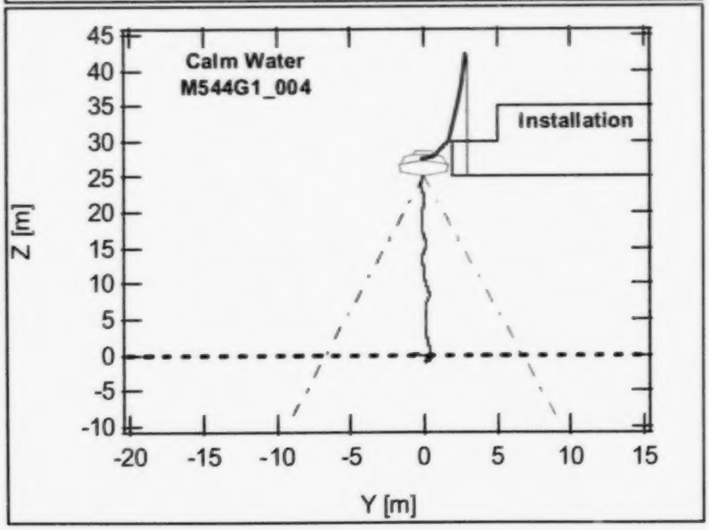
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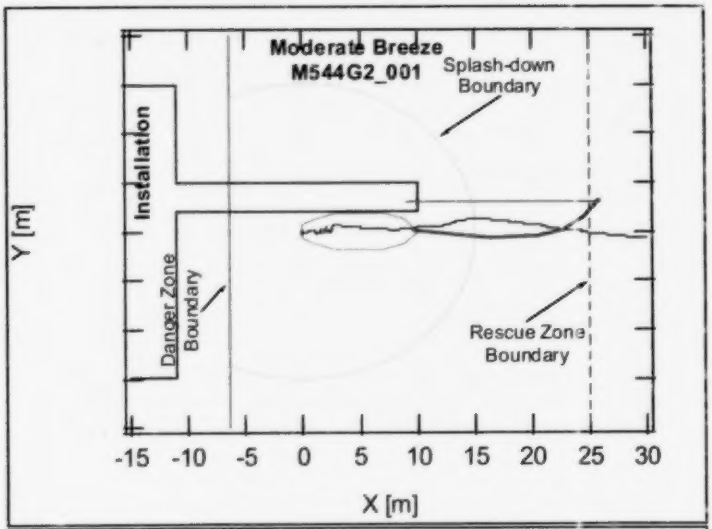
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Splash-down Boundary
Installation
Y [m]
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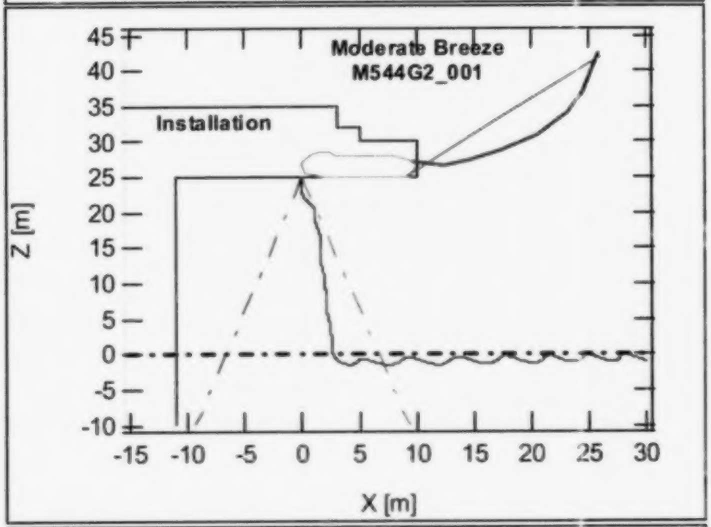
Moderate Breeze
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Installation
Z [m]
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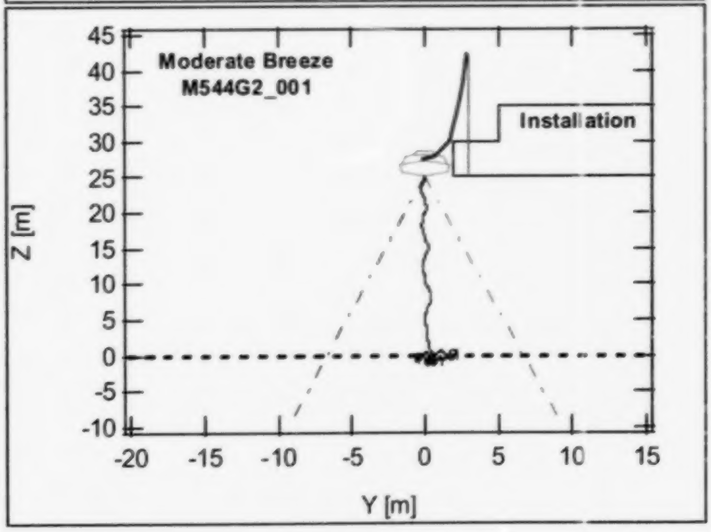
Moderate Breeze
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Installation
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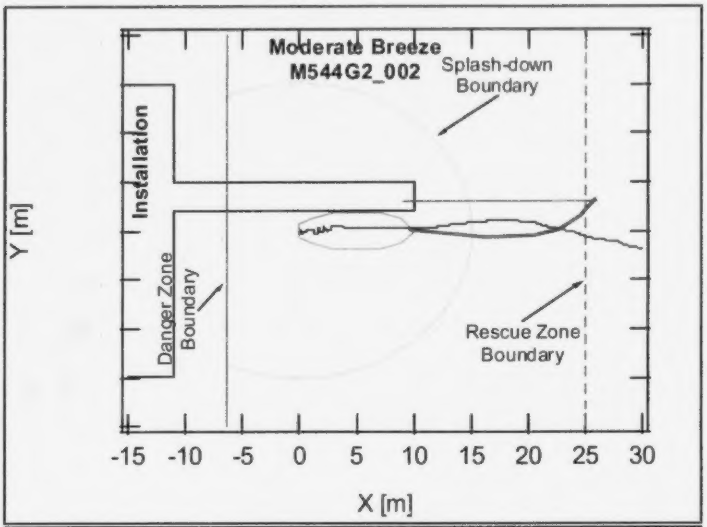
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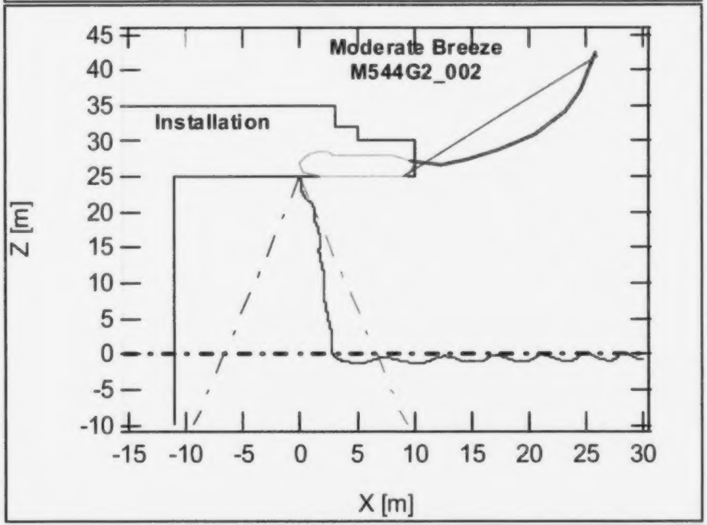
Moderate Breeze
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Installation
Z [m]
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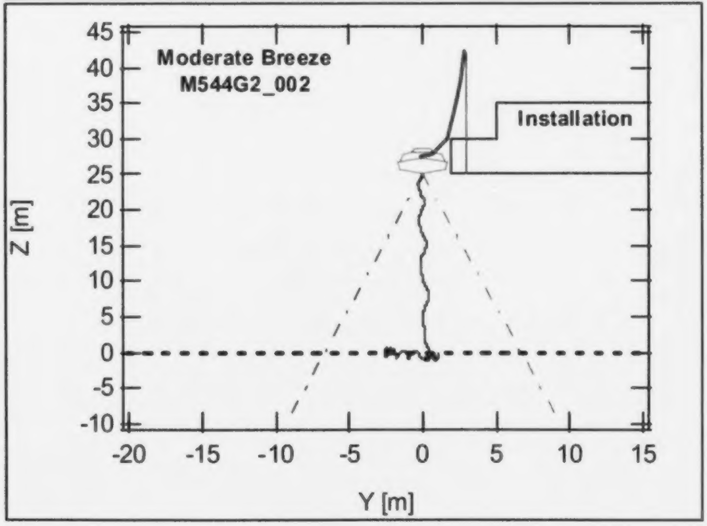
Moderate Breeze
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Installation
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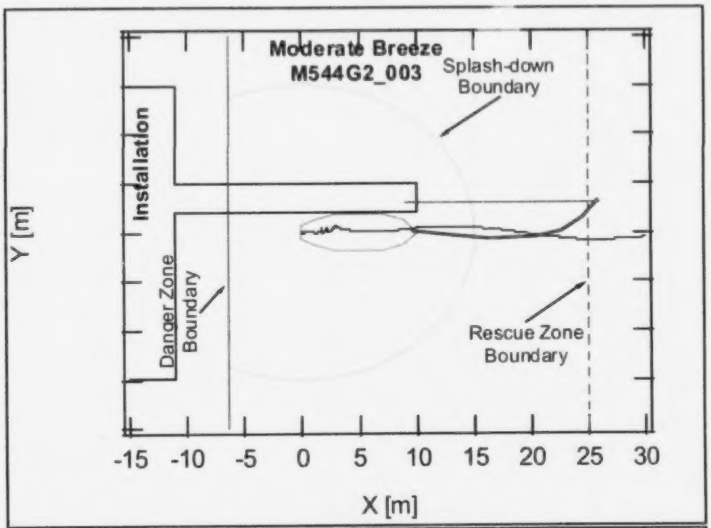
Y [m]


Moderate Breeze
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Splash-down Boundary
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Danger Zone Boundary
Rescue Zone Boundary
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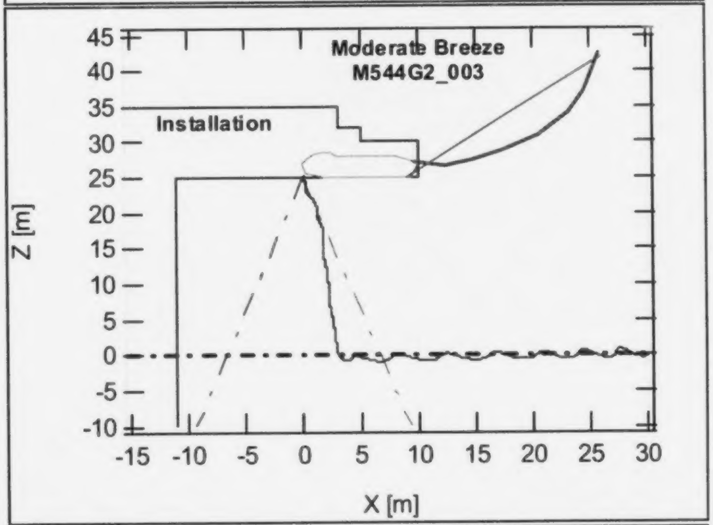
Moderate Breeze
M544G2_003
Installation
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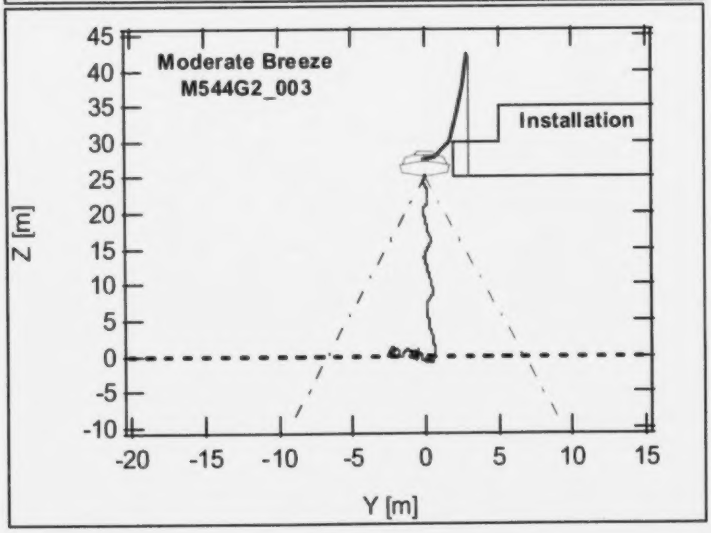
Moderate Breeze
M544G2_003
Installation
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Z [m]
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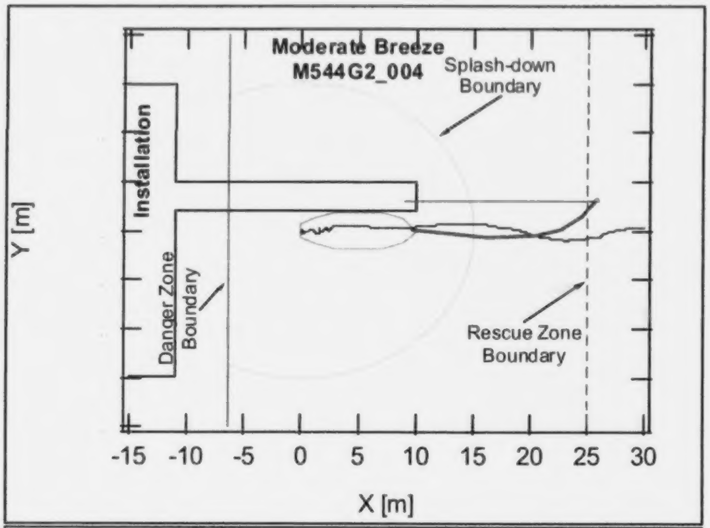
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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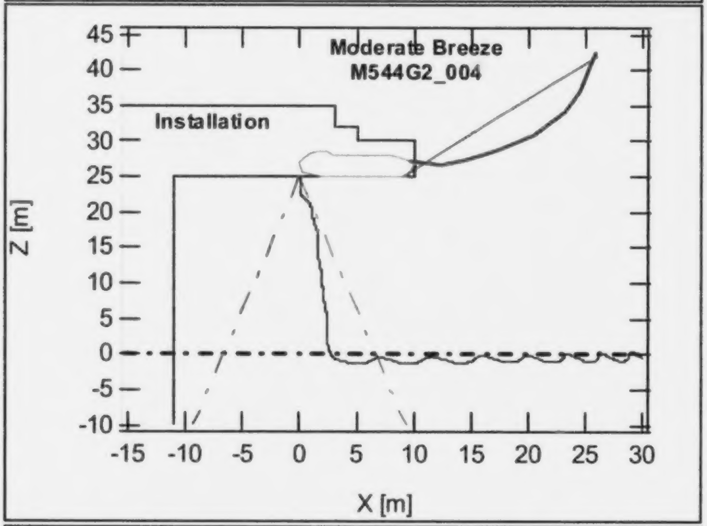
X [m]


Moderate Breeze
M544G2_004
Installation
Z [m]
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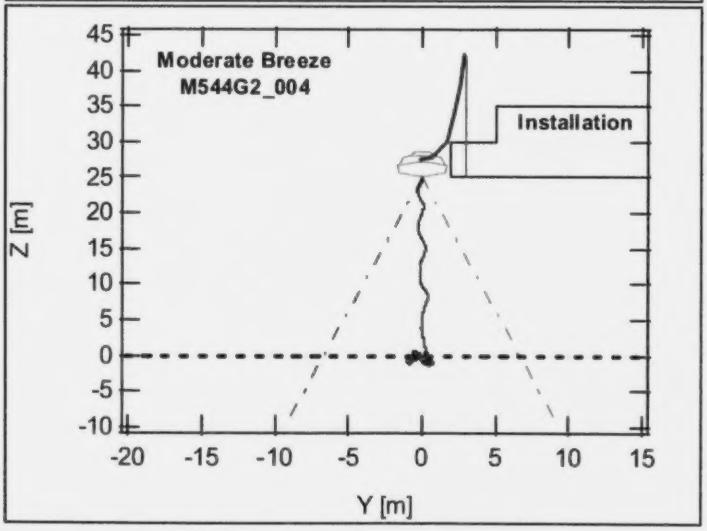
X [m]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Installation
Z [m]
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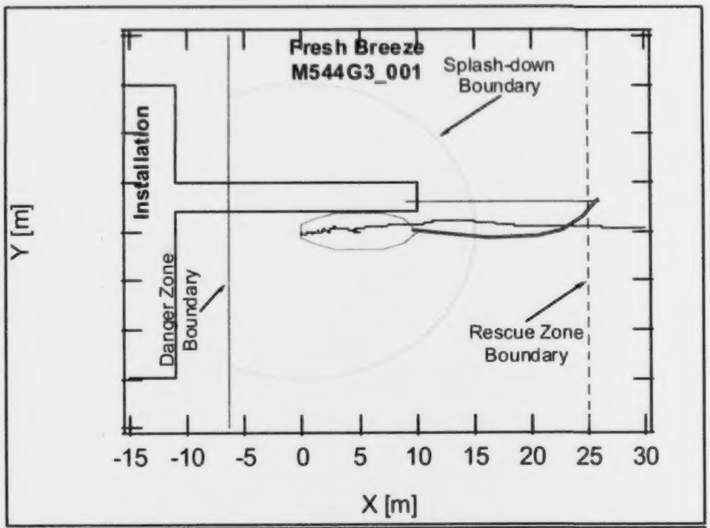
Y [m]


Fresh Breeze
M544G3_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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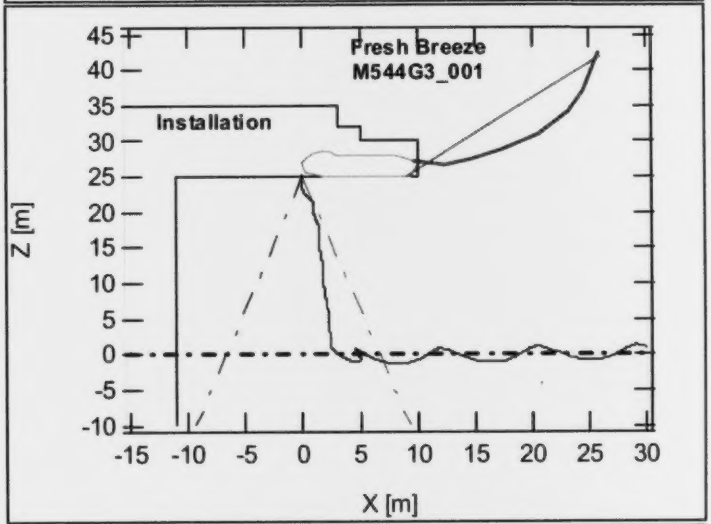
X [m]


Fresh Breeze
M544G3_001
Installation
Z [m]
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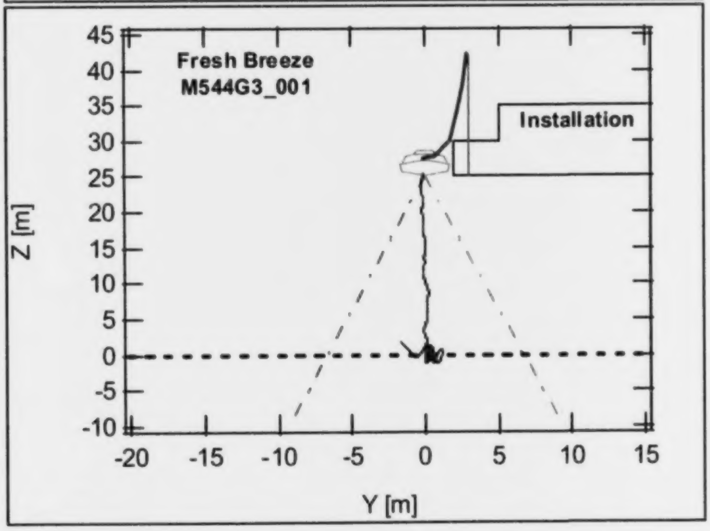
Fresh Breeze
M544G3_001
Installation
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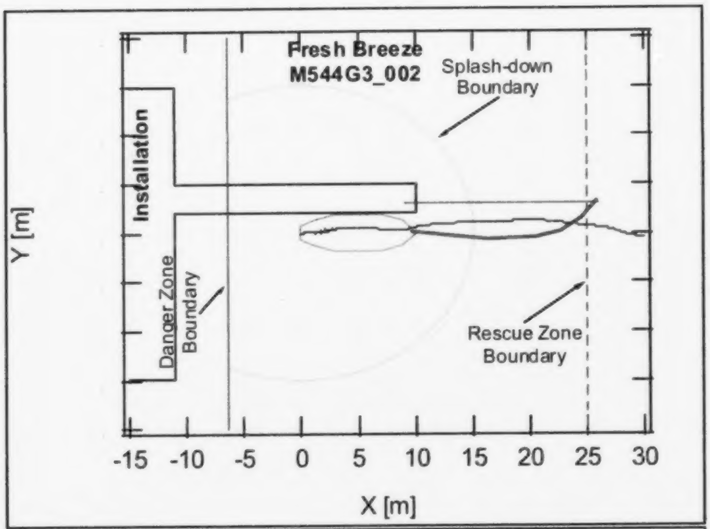
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Splash-down Boundary
Installation
Danger Zone Boundary
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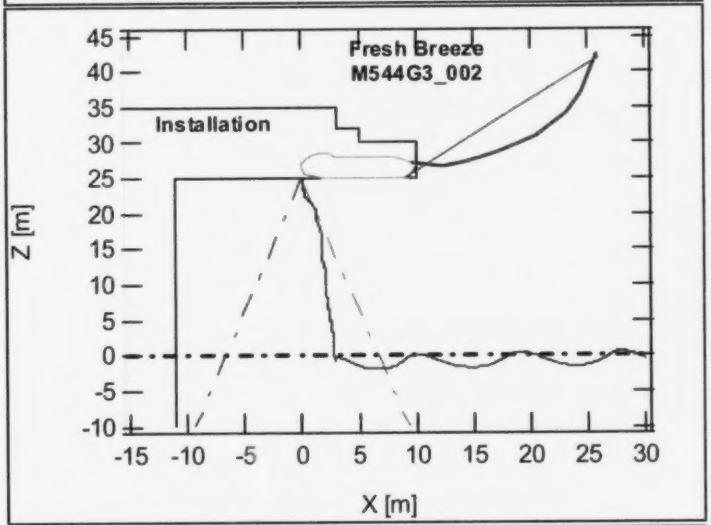
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Installation
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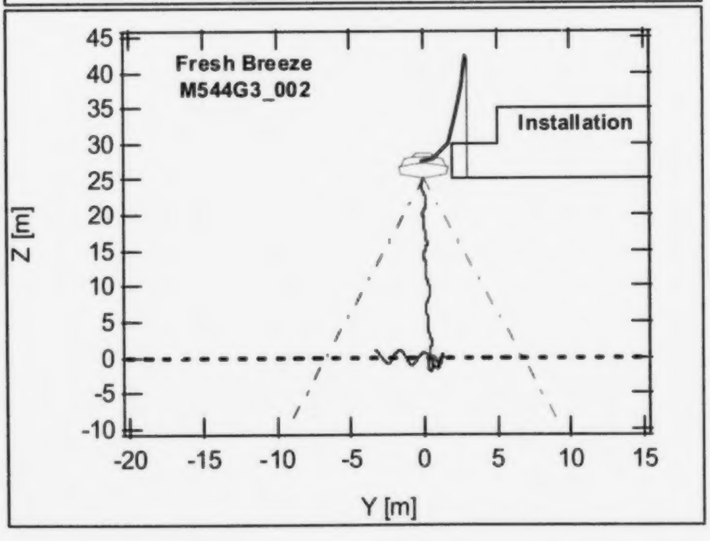
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Installation
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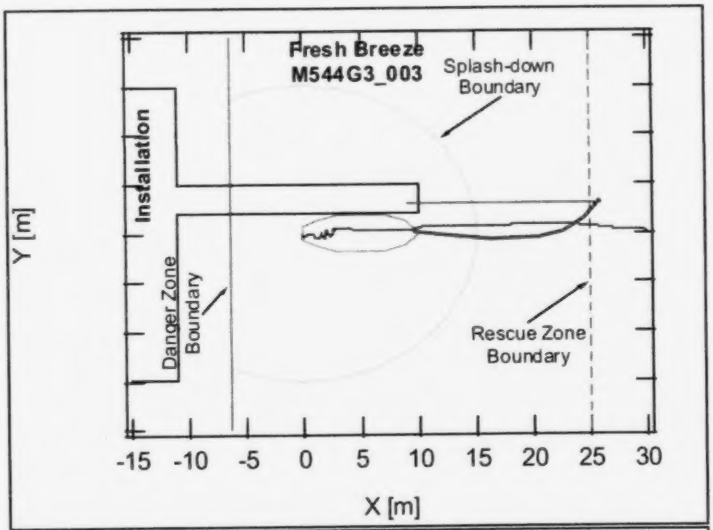
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Splash-down
Boundary
Installation
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Danger Zone
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Rescue Zone
Boundary
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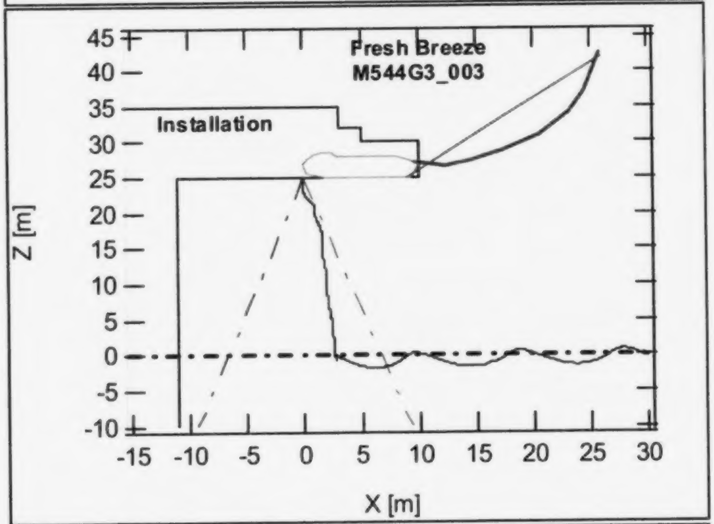
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Installation
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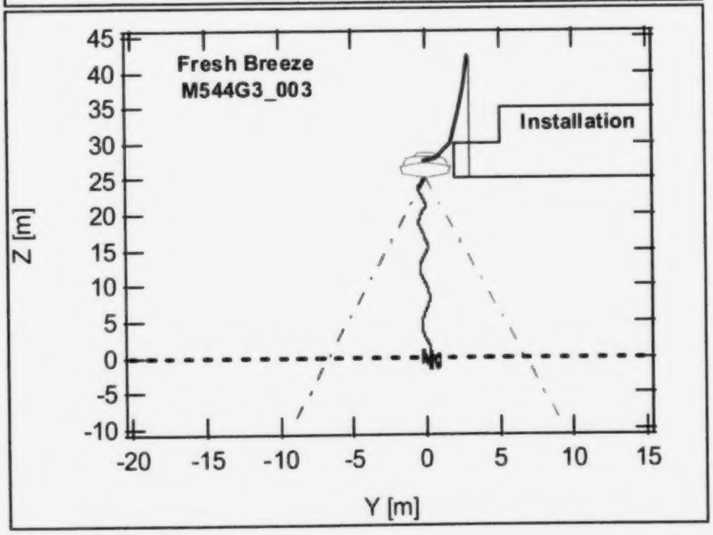
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Installation
Z [m]
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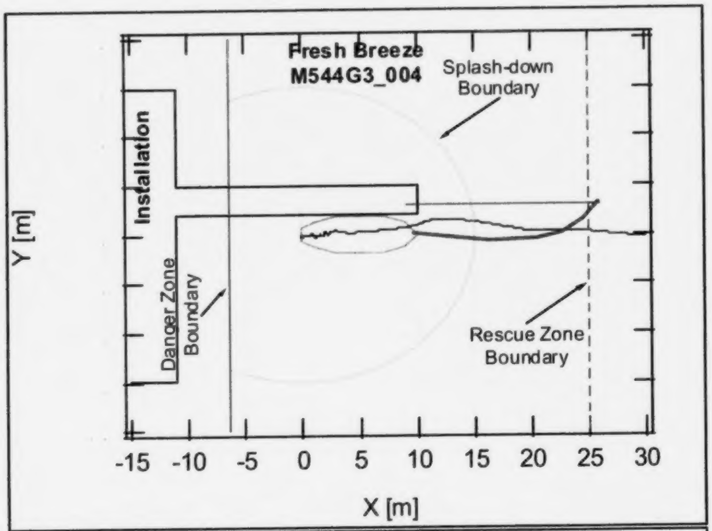
Y [m]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Splash-down
Boundary
Installation
Danger Zone
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Rescue Zone
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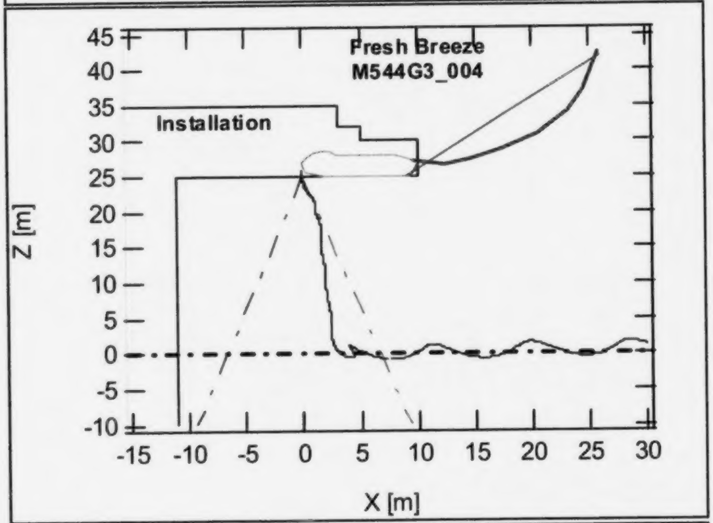
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Installation
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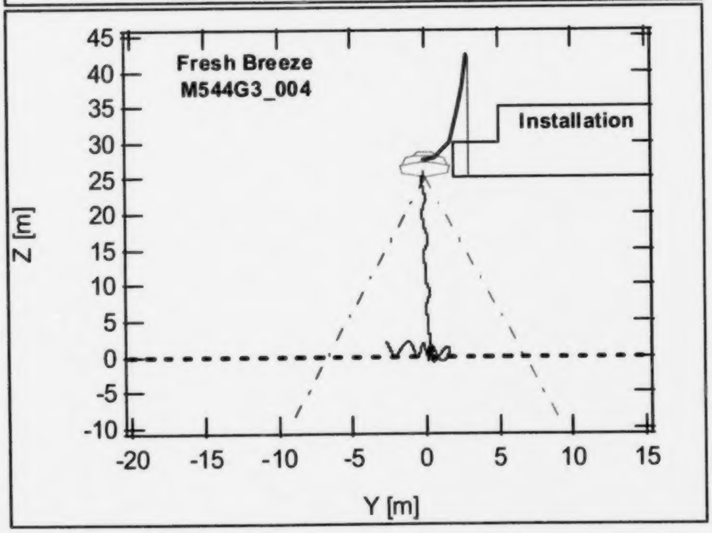
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Installation
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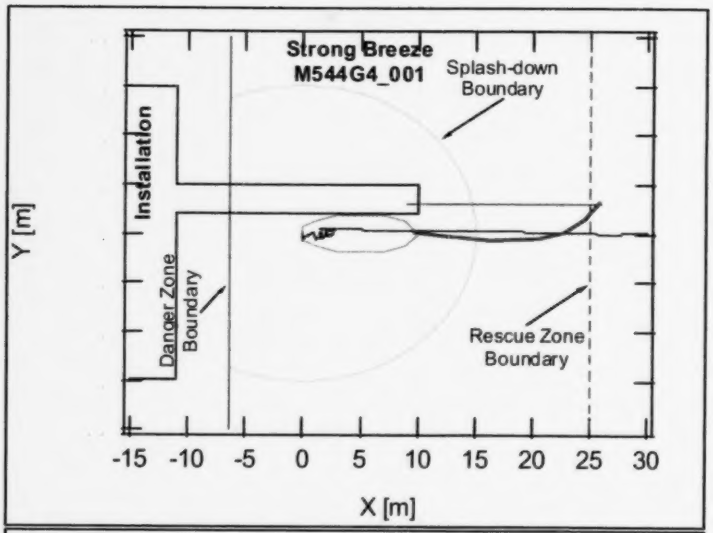
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M544G4_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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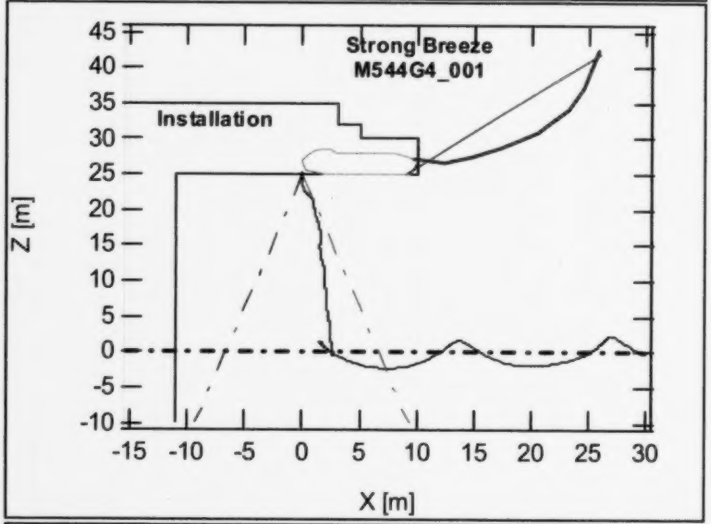
Strong Breeze
M544G4_001
Installation
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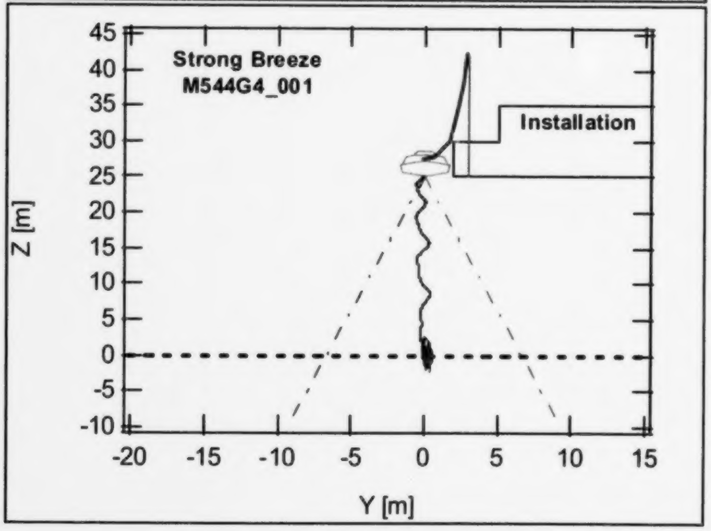
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Installation
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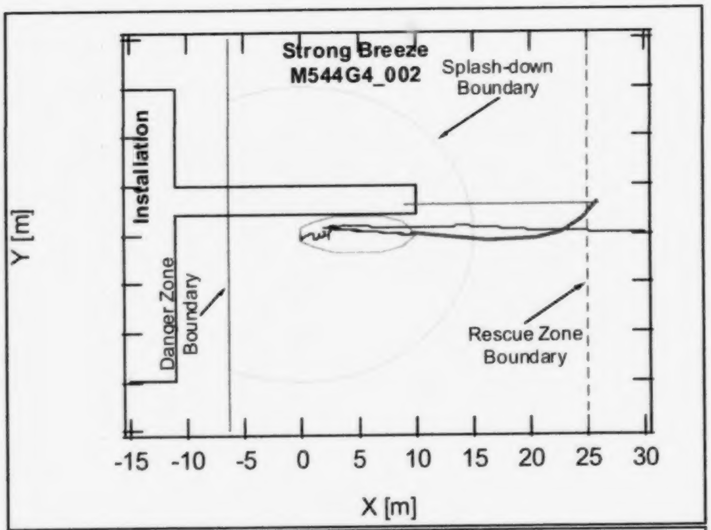
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Splash-down
Boundary
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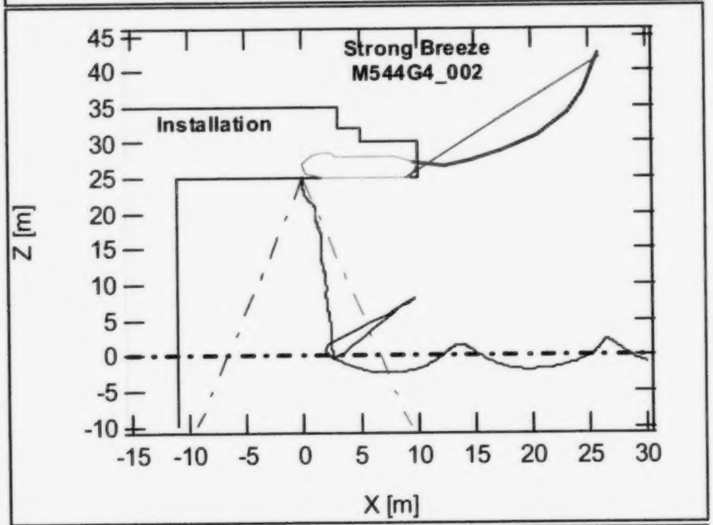
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Installation
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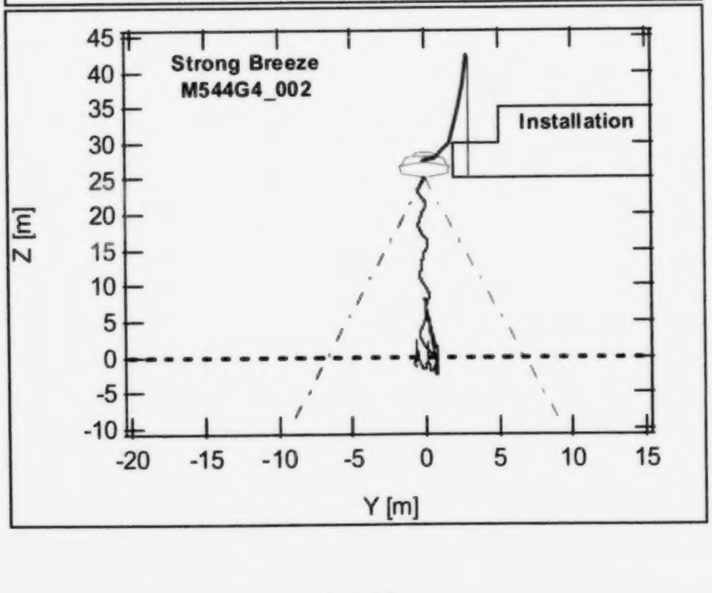
Strong Breeze
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Installation
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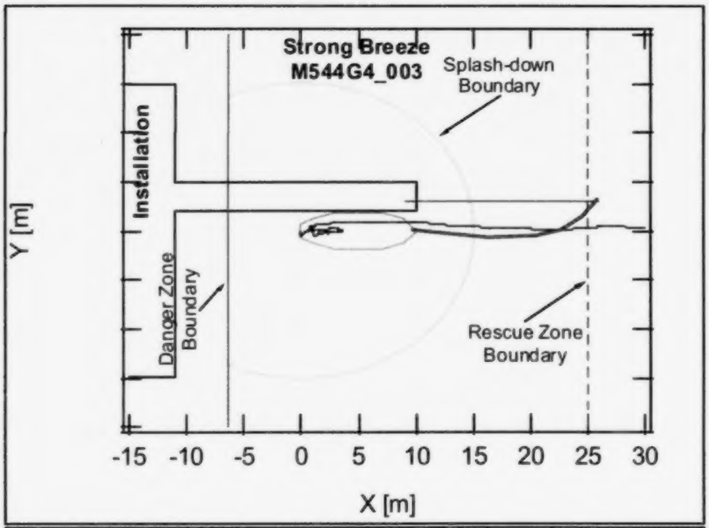
Strong Breeze
M544G4_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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X [m]
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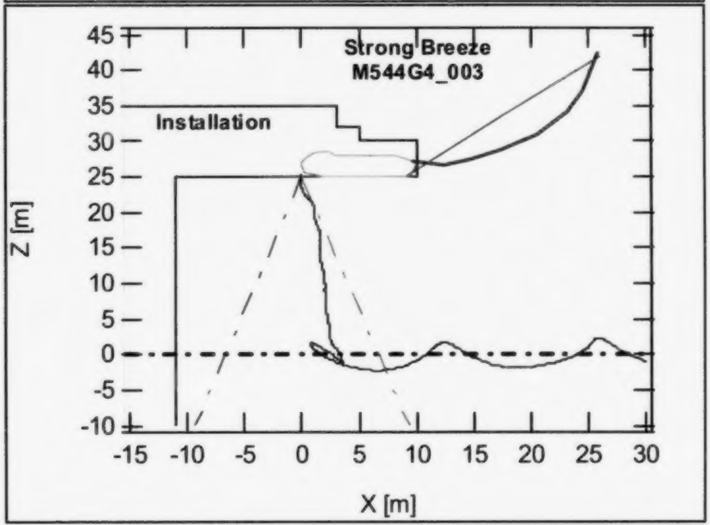
Strong Breeze
M544G4_003
Installation
Z [m]
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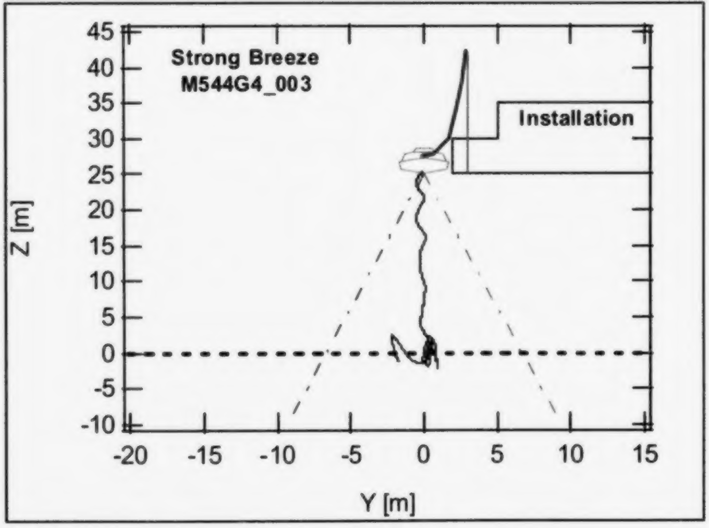
Strong Breeze
M544G4_003
Installation
Z [m]
Y [m]
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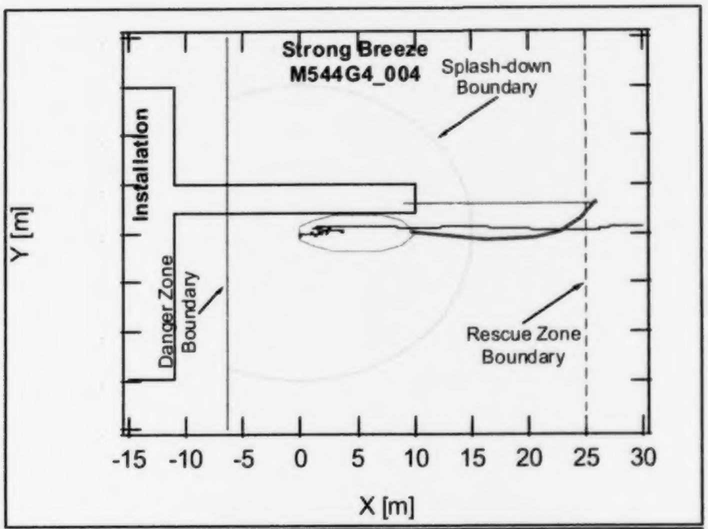
Strong Breeze
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Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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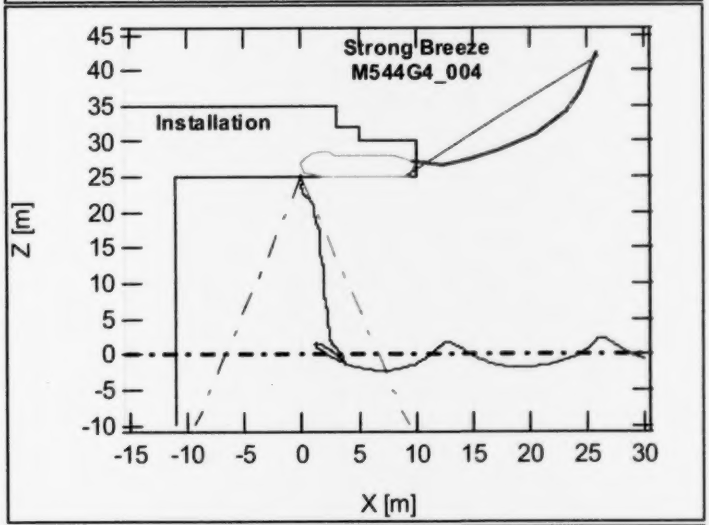
Strong Breeze
M544G4_004
Installation
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Z [m]
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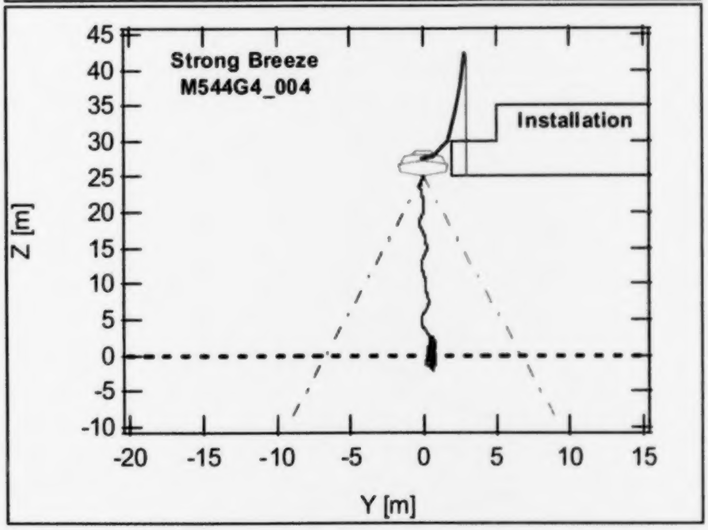
X [m]


Strong Breeze
M544G4_004
Installation
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Z [m]
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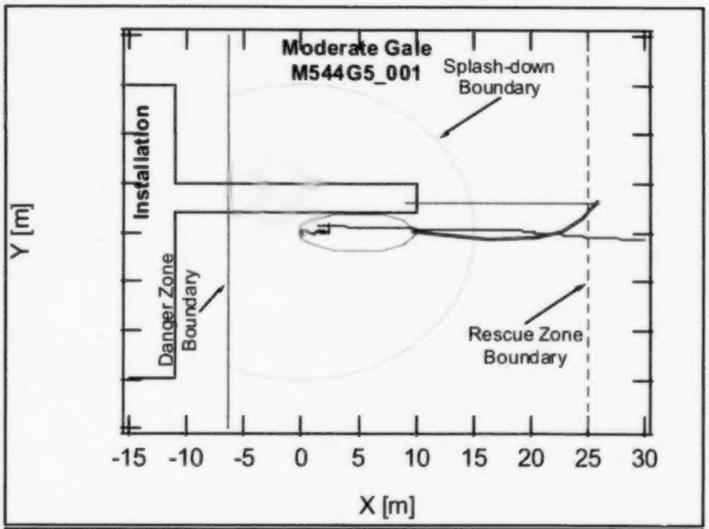
Y [m]


Moderate Gale
M544G5_001
Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
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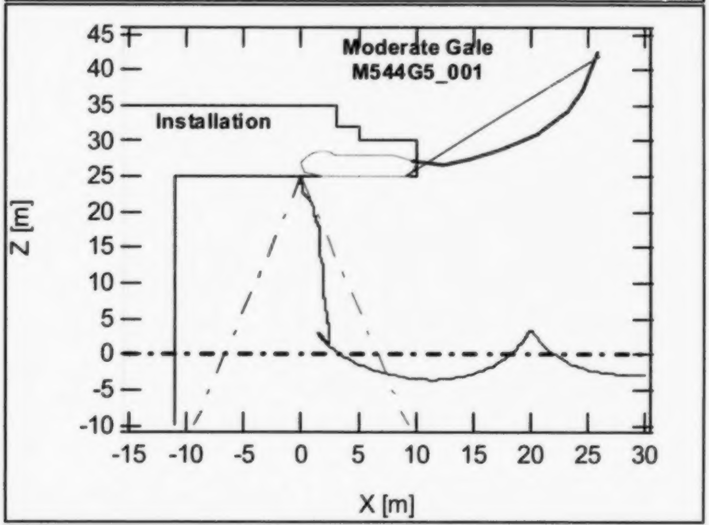
X [m]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Installation
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Z [m]
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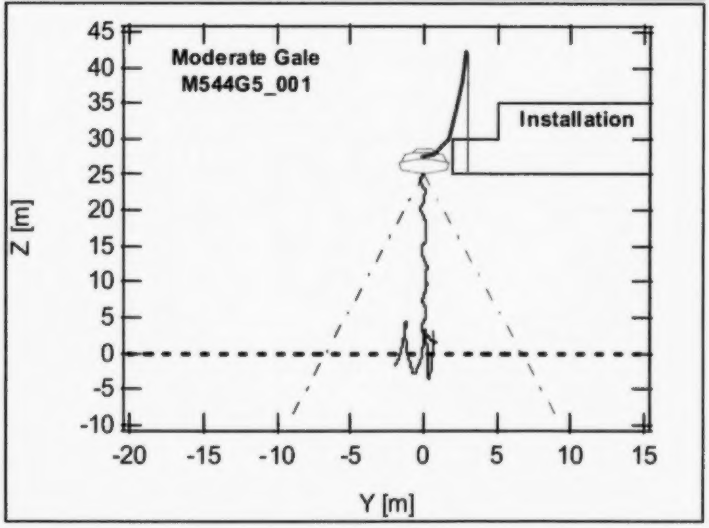
X [m]


Moderate Gale
M544G5_001
Installation
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Z [m]
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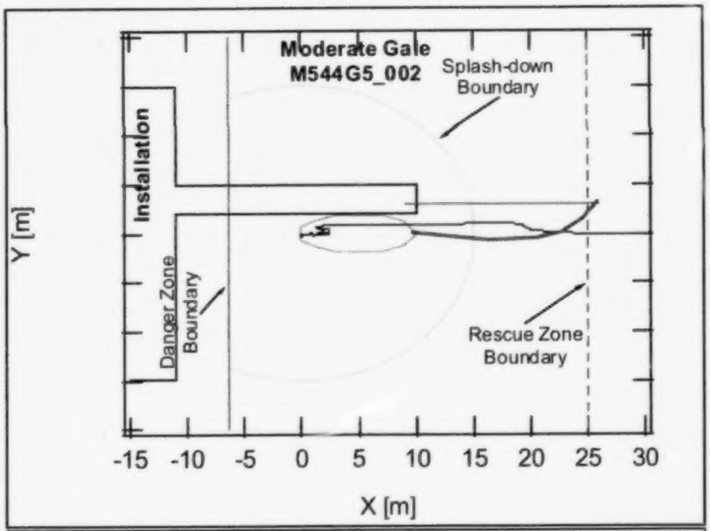
Y [m]


Moderate Gale
M544G5_002
Splash-down
Boundary
Installation
Y [m]
Danger Zone
Boundary
Rescue Zone
Boundary
-15
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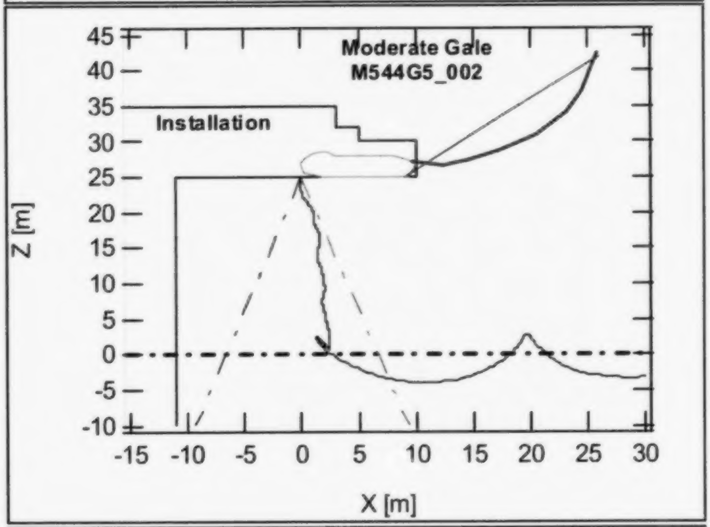
X [m]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Moderate Gale
M544G5_002
Installation
Z [m]
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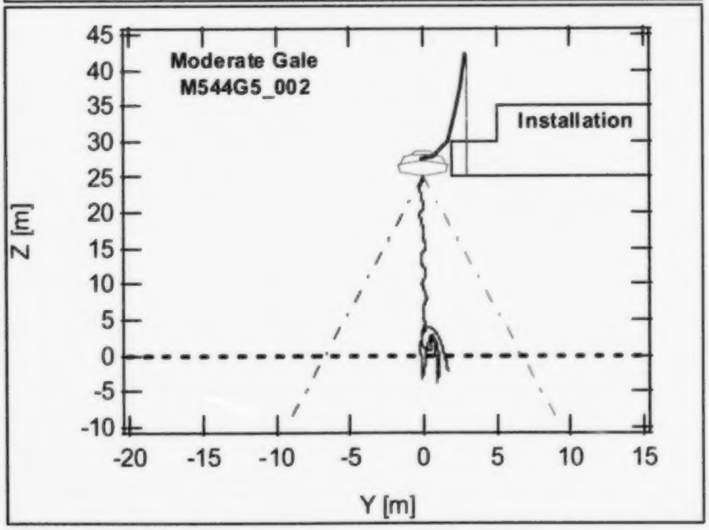
X [m]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Moderate Gale
M544G5_002
Installation
Z [m]
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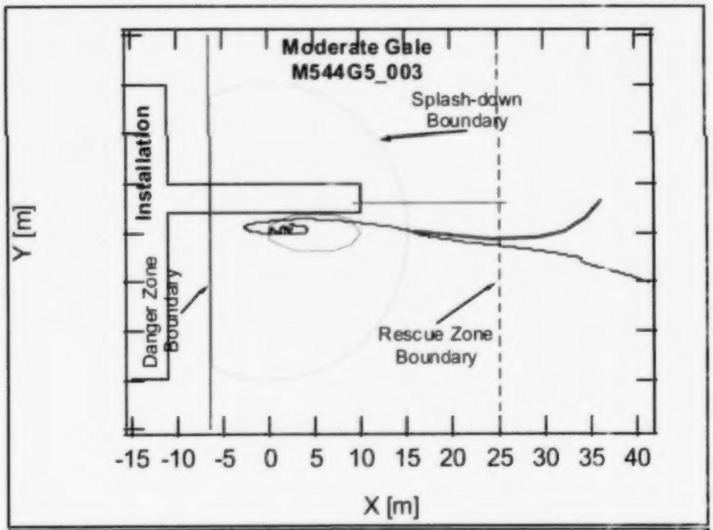
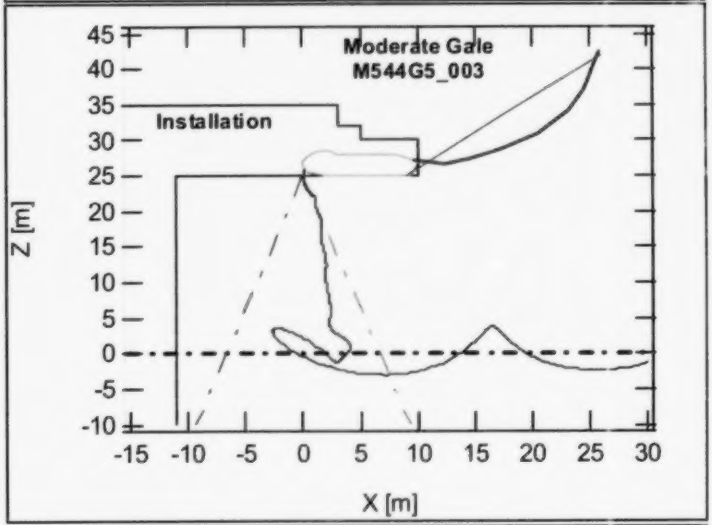
Y [m]


Moderate Gale
M544G5_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]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M544G5_003
Installation
Z [m]
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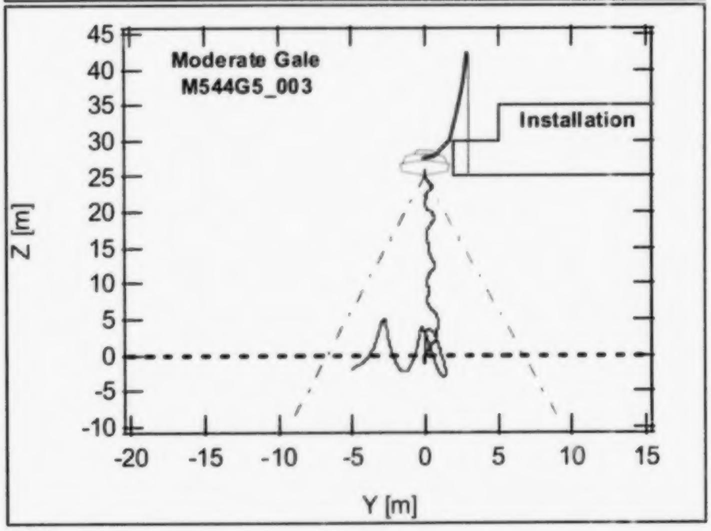
-15 -10 -5 0 5 10 15 20 25 30
X [m]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Installation
Z [m]
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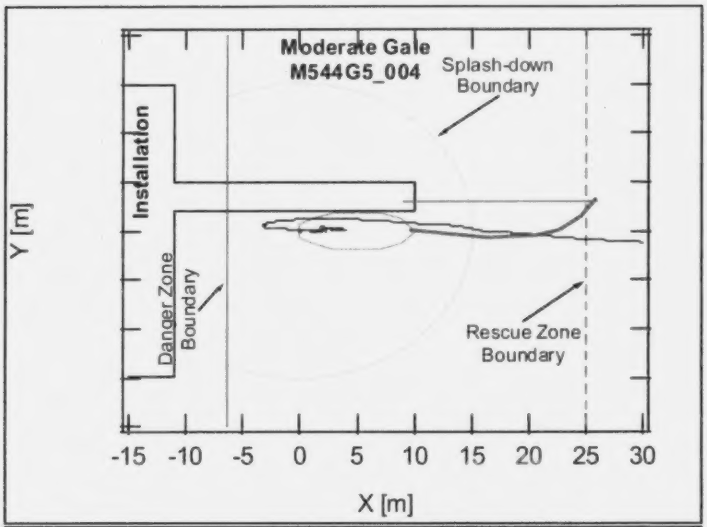
-20 -15 -10 -5 0 5 10 15
Y [m]


Moderate Gale
M544G5_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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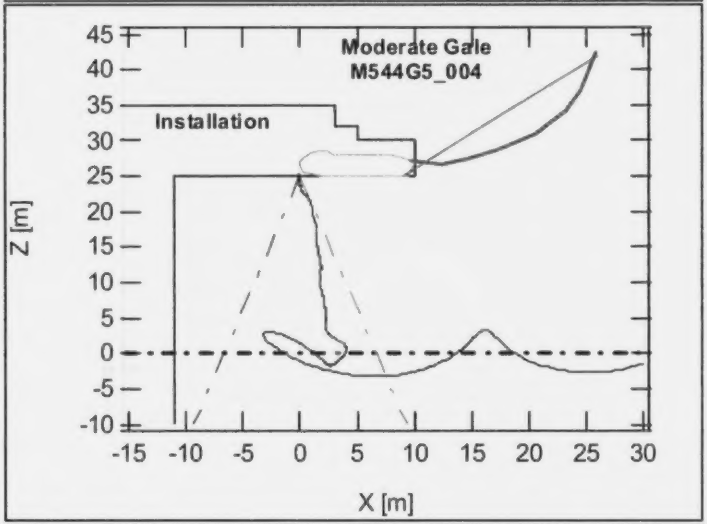
X [m]


Moderate Gale
M544G5_004
Installation
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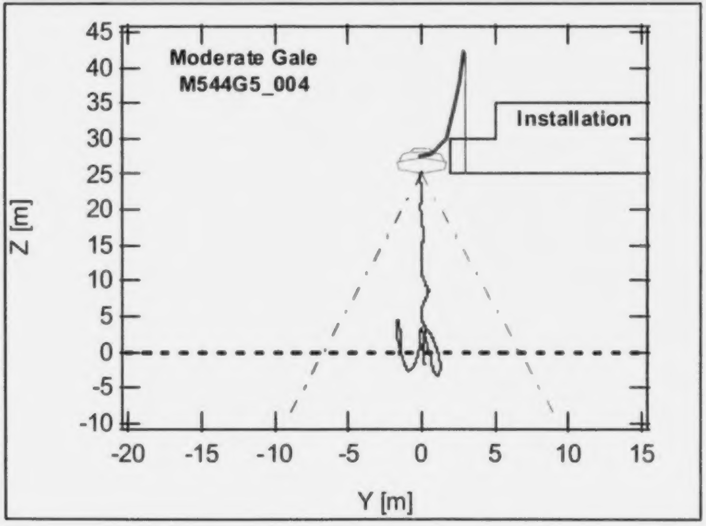
X [m]


Moderate Gale
M544G5_004
Installation
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Z [m]
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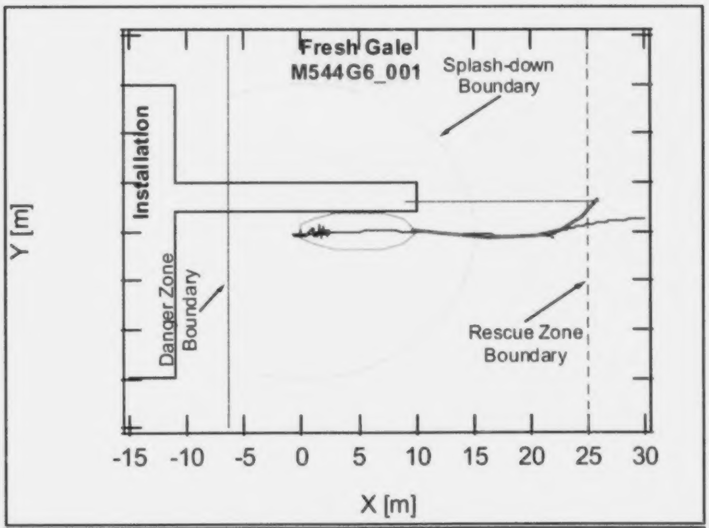
Fresh Gale
M544G6_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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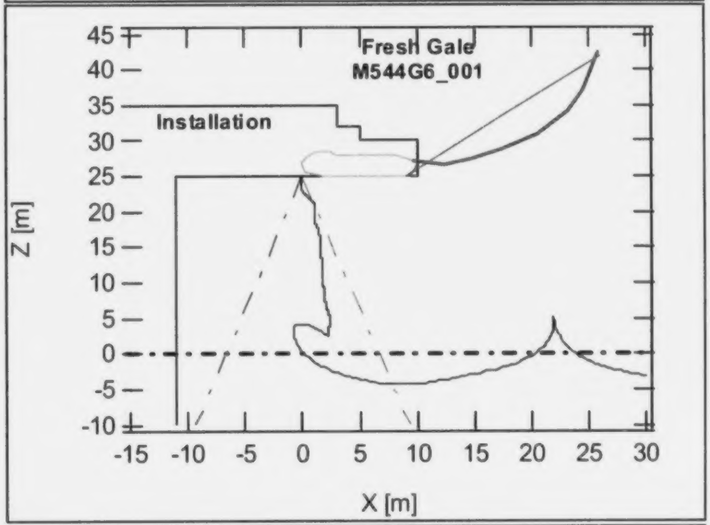
X [m]


Fresh Gale
M544G6_001
Installation
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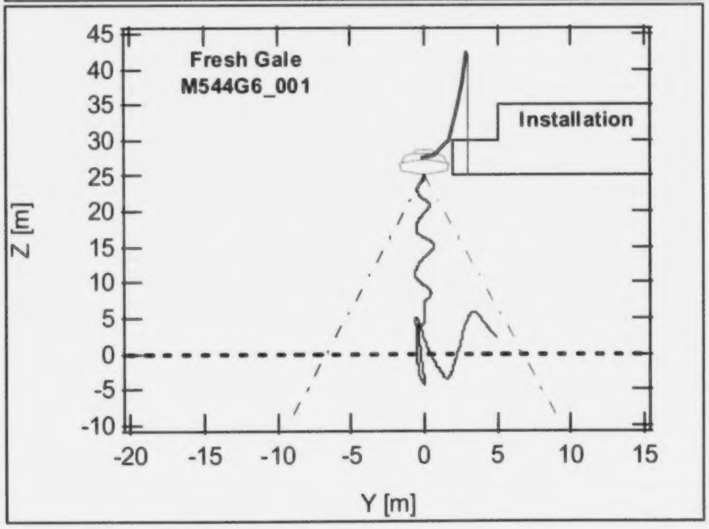
Fresh Gale
M544G6_001
Installation
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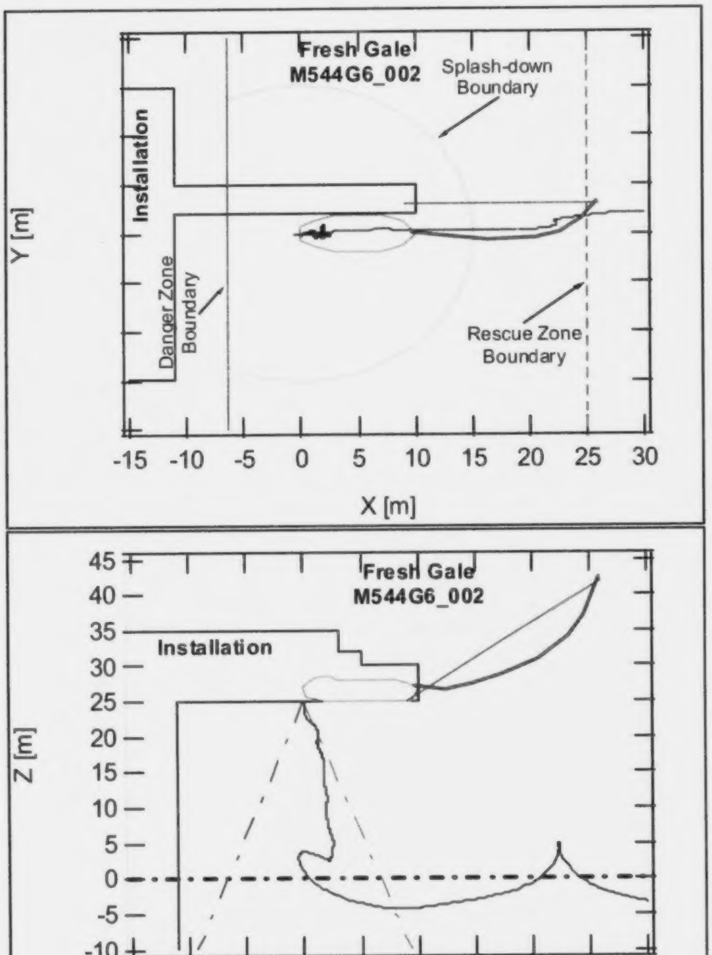
Fresh Gale
M544G6_002
Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
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Fresh Gale
M544G6_002
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Installation
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Fresh Gale
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Installation
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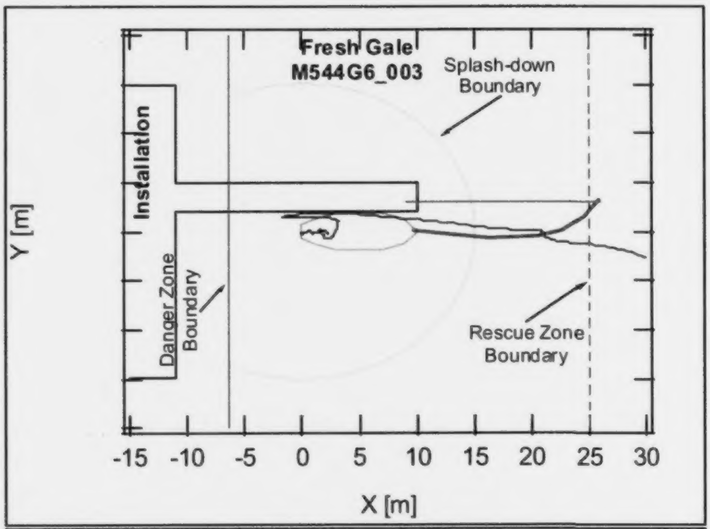
Fresh Gale
M544G6_003
Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
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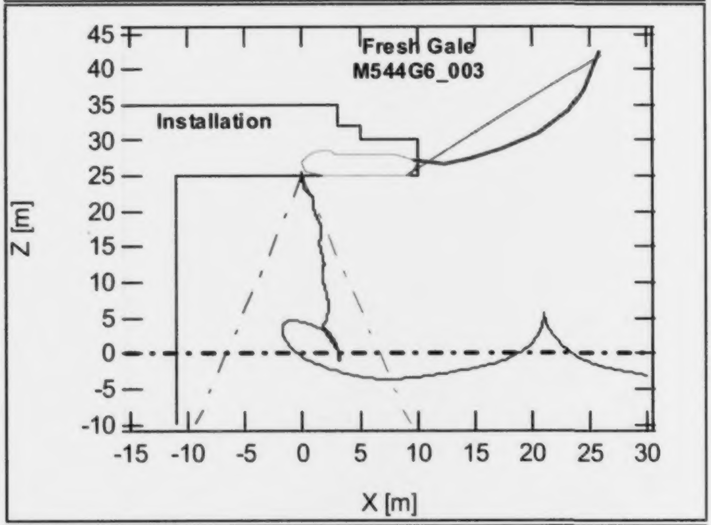
Fresh Gale
M544G6_003
Installation
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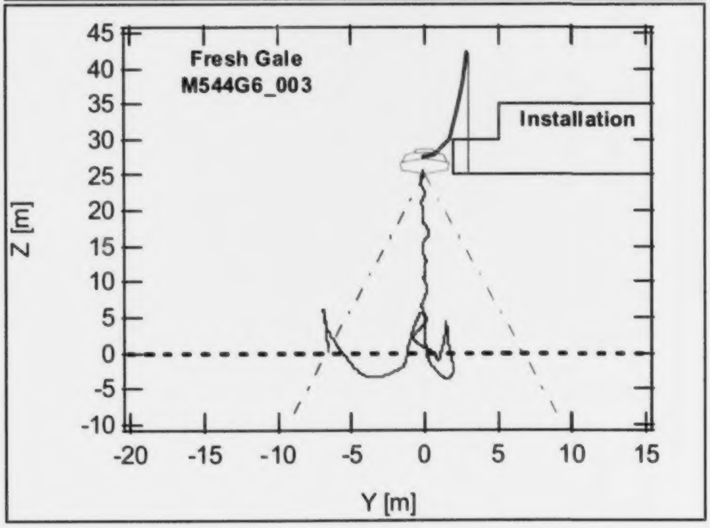
Fresh Gale
M544G6_003
Installation
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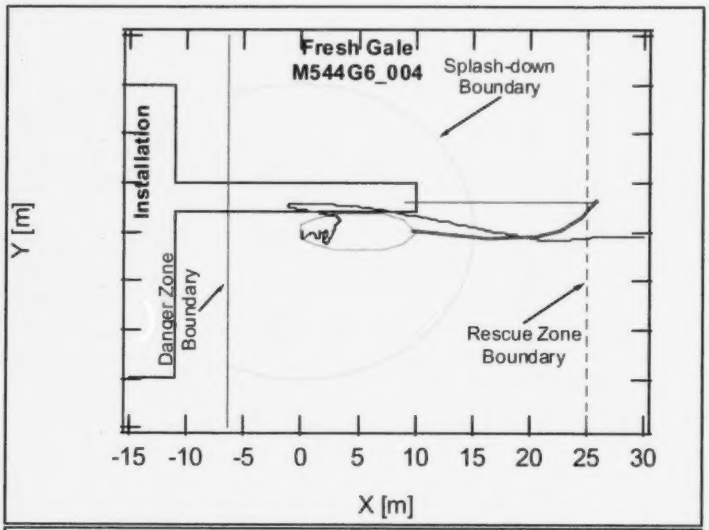
Y [m]


Fresh Gale
M544G6_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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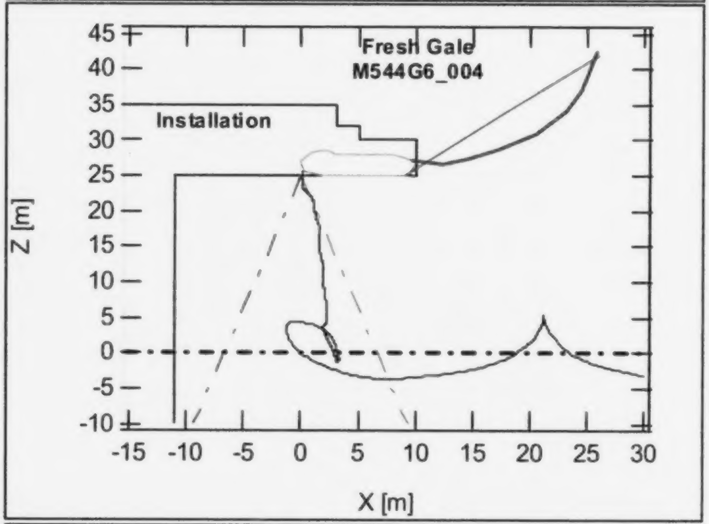
Fresh Gale
M544G6_004
Installation
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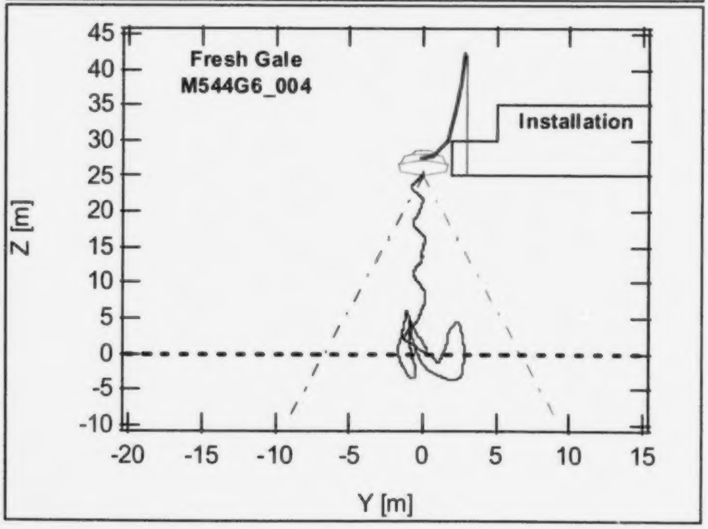
Fresh Gale
M544G6_004
Installation
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Z [m]
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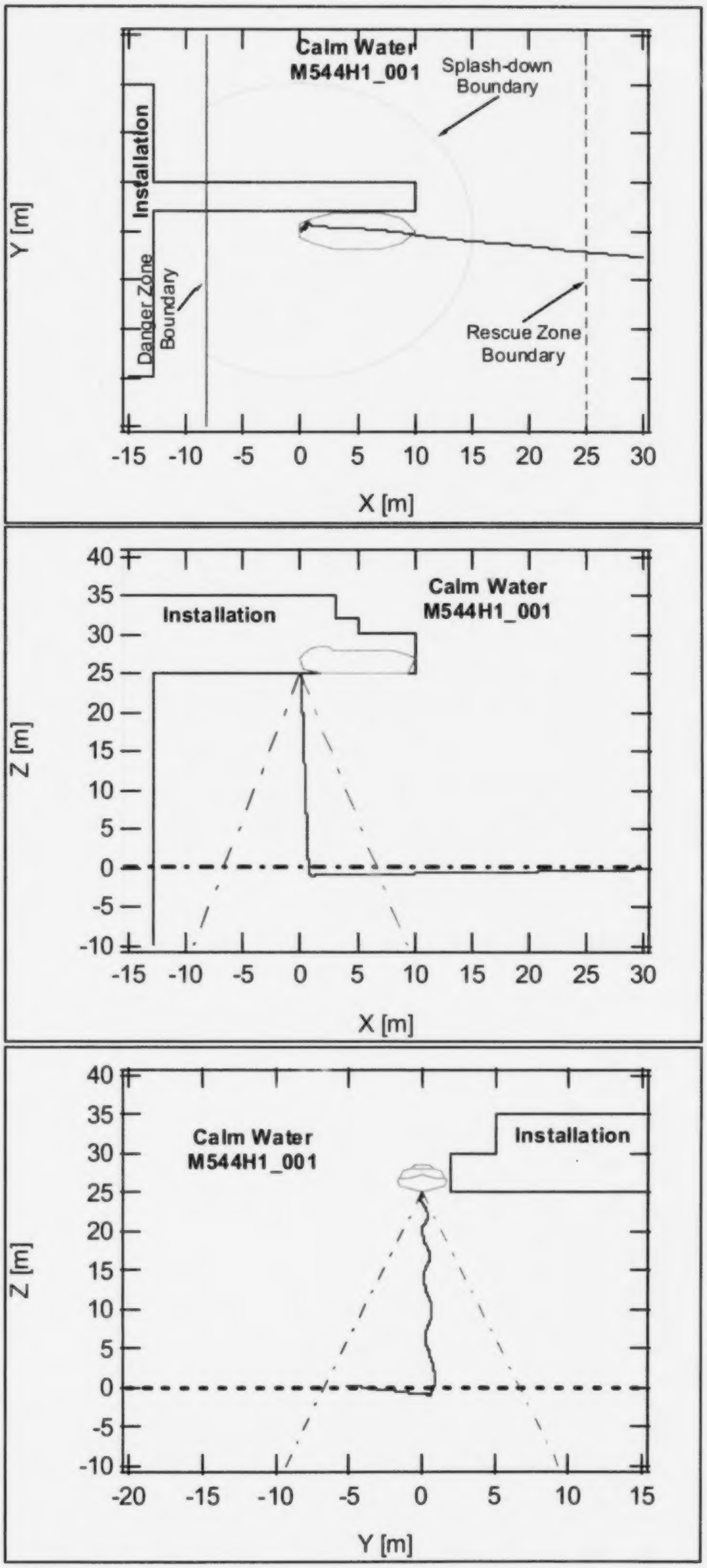
Y [m]


Calm Water
M544H1_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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X [m]
Calm Water
M544H1_001
Installation
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Z [m]
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X [m]
Calm Water
M544H1_001
Installation
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Z [m]
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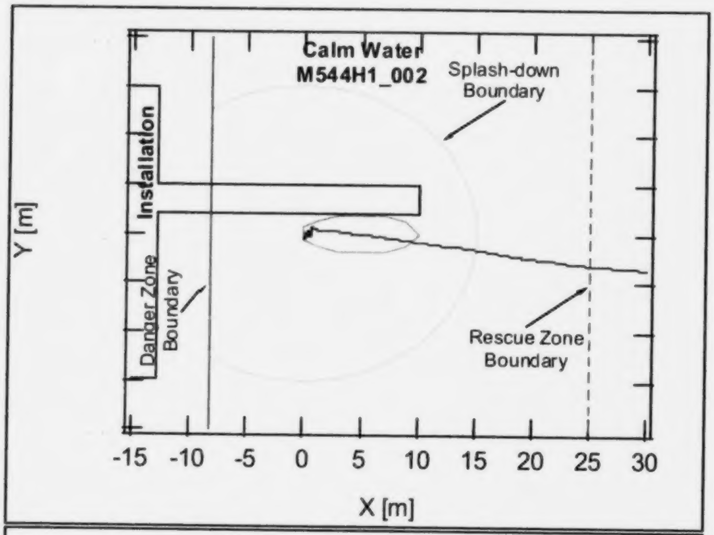
Y [m]


Calm Water
M544H1_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
X [m]
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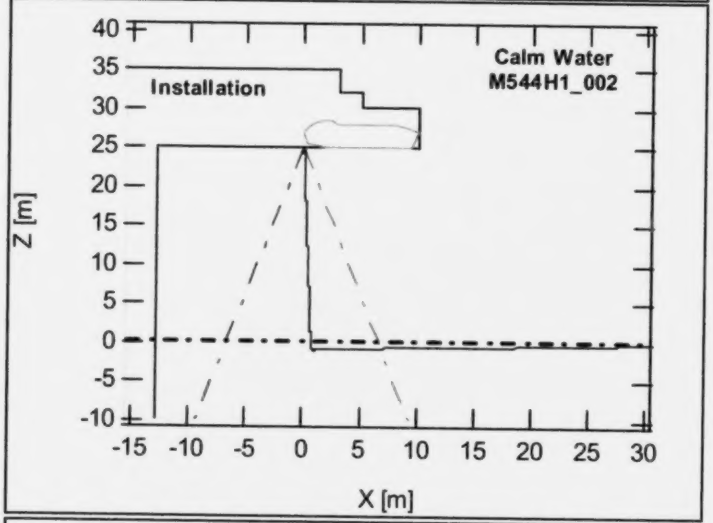
Calm Water
M544H1_002
Installation
Z [m]
X [m]
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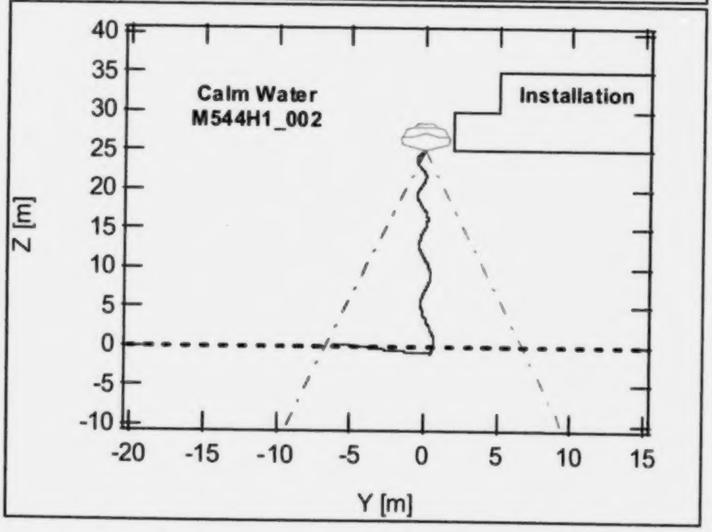
Calm Water
M544H1_002
Installation
Z [m]
Y [m]
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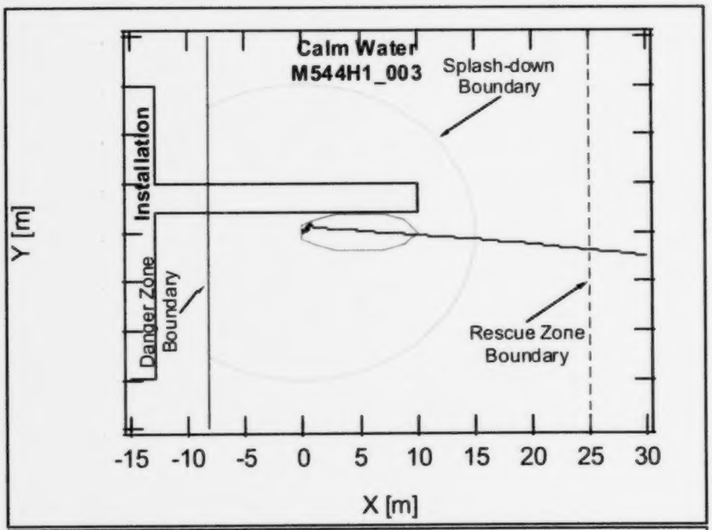
Calm Water
M544H1_003
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15
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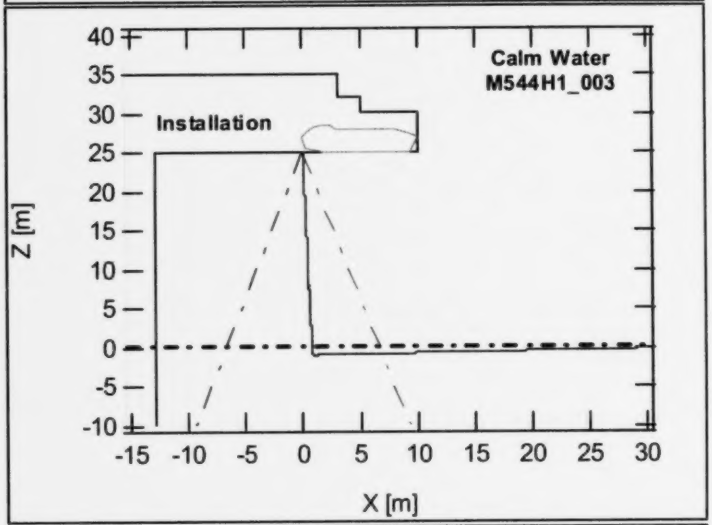
X [m]


Calm Water
M544H1_003
Installation
Z [m]
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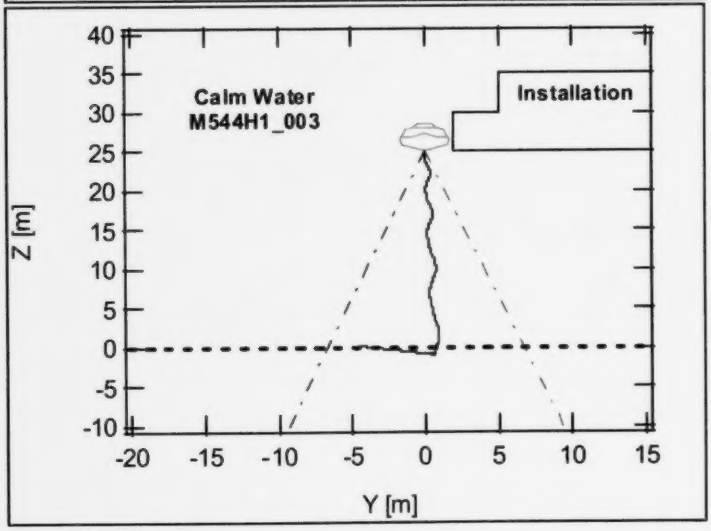
X [m]


Calm Water
M544H1_003
Installation
Z [m]
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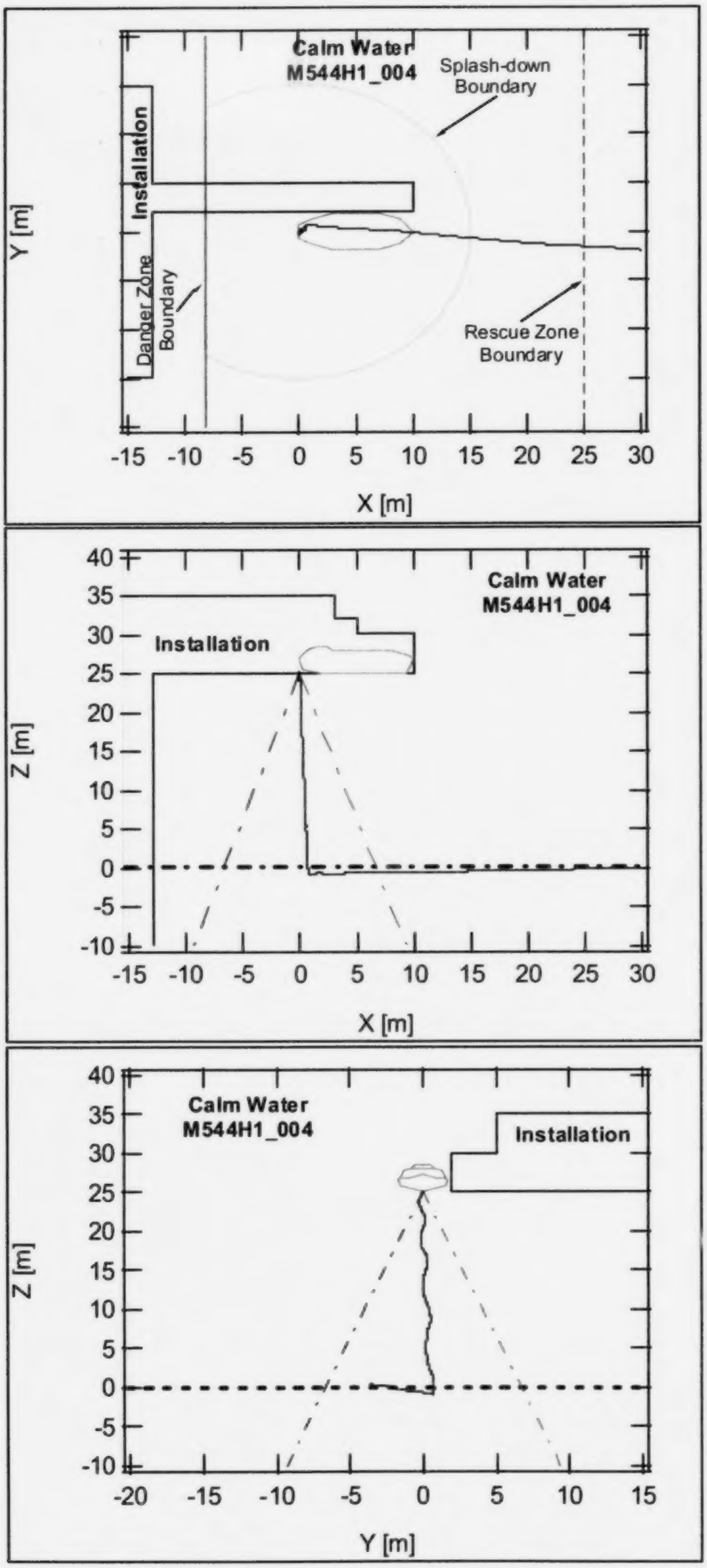
Y [m]


Calm Water
M544H1_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]
40 35 30 25 20 15 10 5 0 -5 -10
Z [m]
Calm Water
M544H1_004
Installation
X [m]
Calm Water
M544H1_004
Installation
Z [m]
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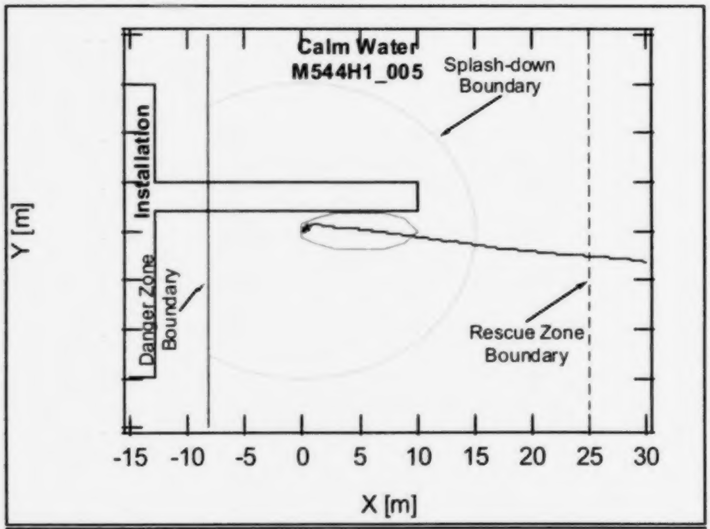
Y [m]


Calm Water
M544H1_005
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
X [m]
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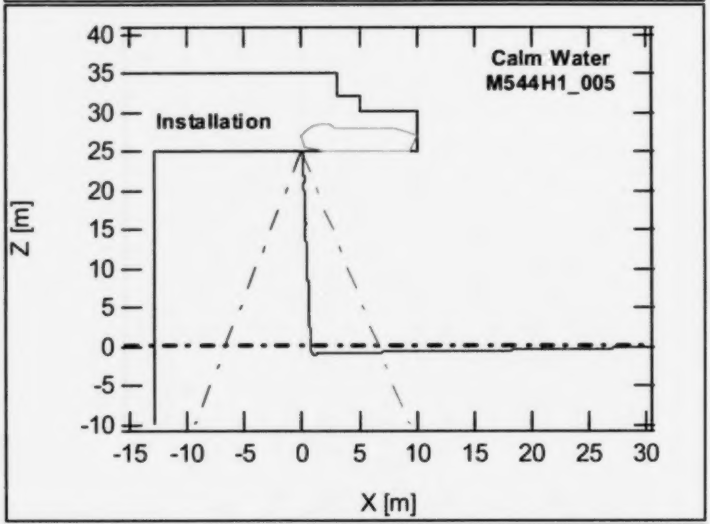
Calm Water
M544H1_005
Installation
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X [m]
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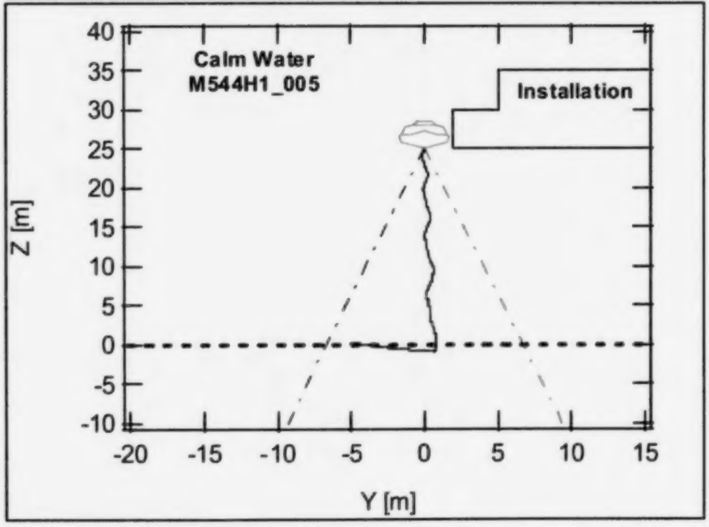
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M544H1_005
Installation
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Y [m]
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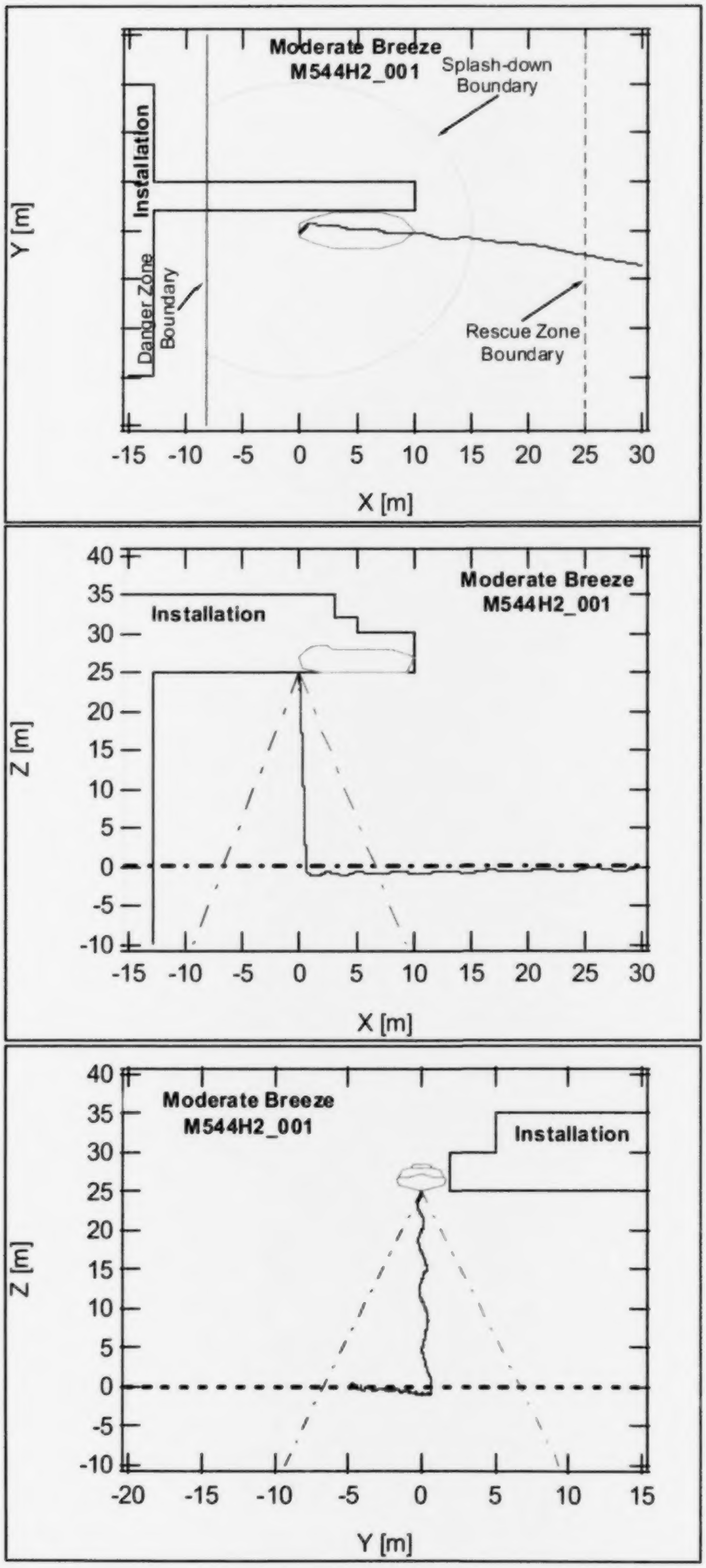
Moderate Breeze
M544H2_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
X [m]
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Moderate Breeze
M544H2_001
Installation
Z [m]
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X [m]
Moderate Breeze
M544H2_001
Installation
Z [m]
Y [m]
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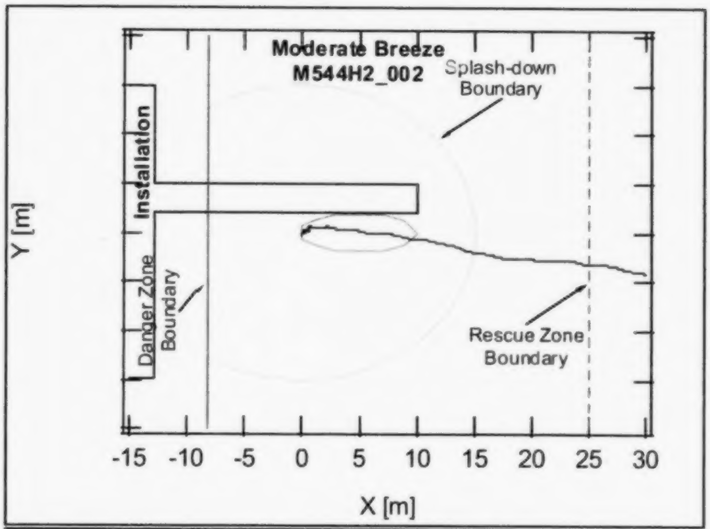
Moderate Breeze
M544H2_002
Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
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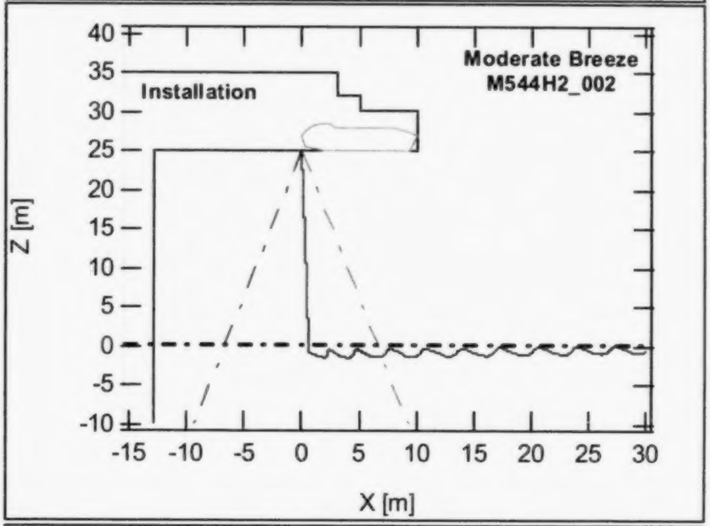
X [m]


Moderate Breeze
M544H2_002
Installation
Z [m]
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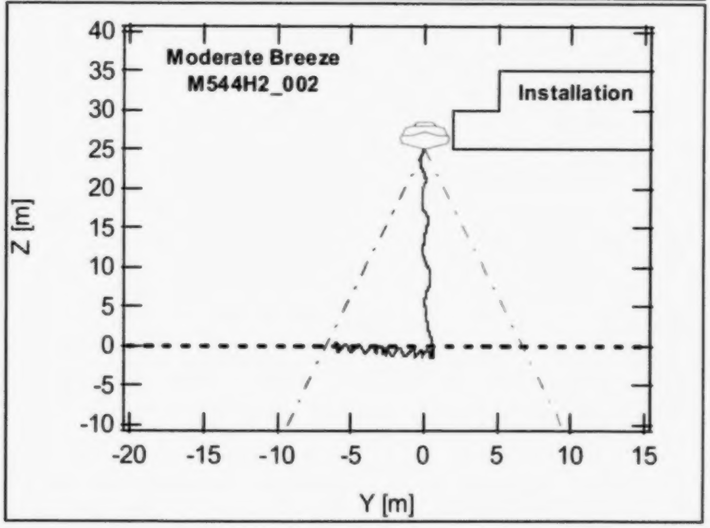
X [m]


Moderate Breeze
M544H2_002
Installation
Z [m]
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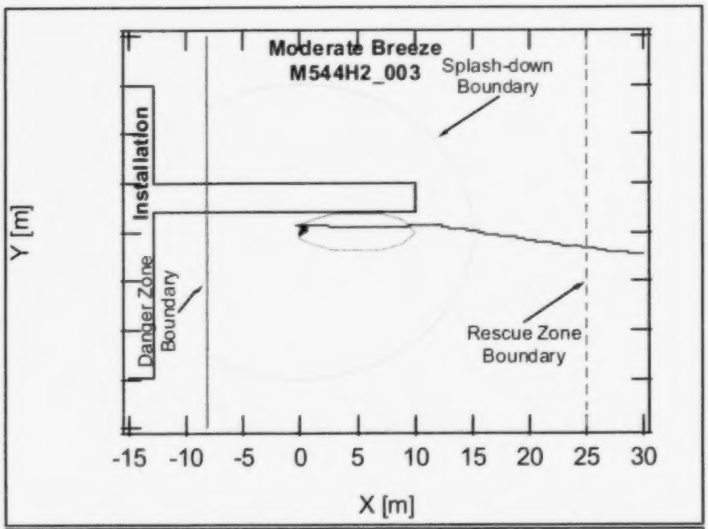
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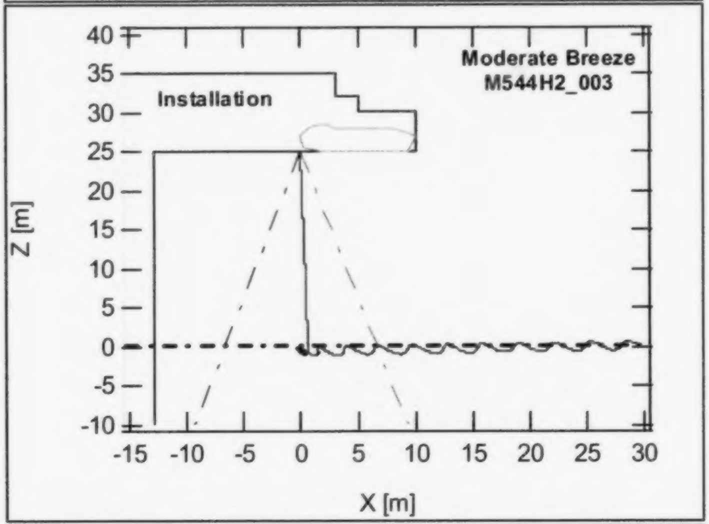
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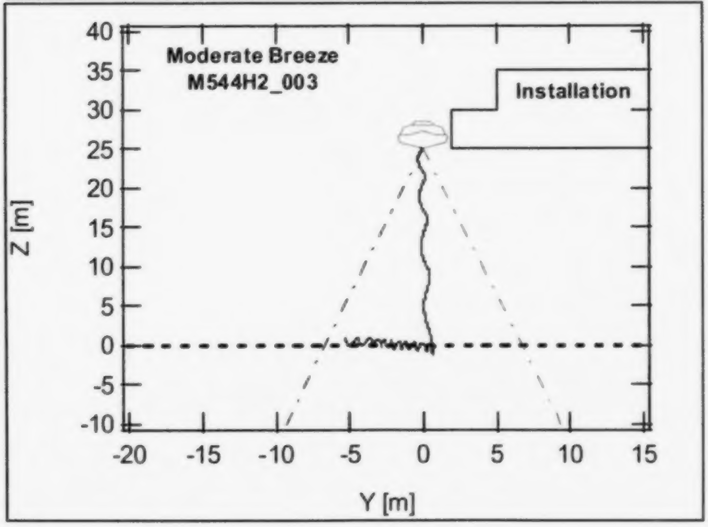
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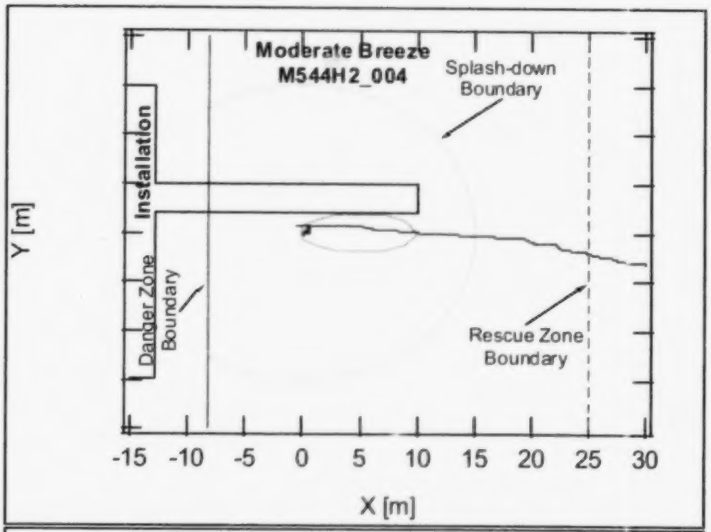
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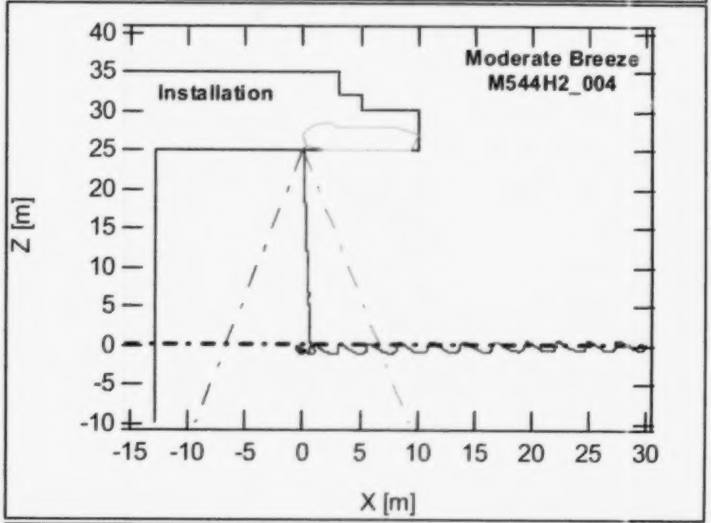
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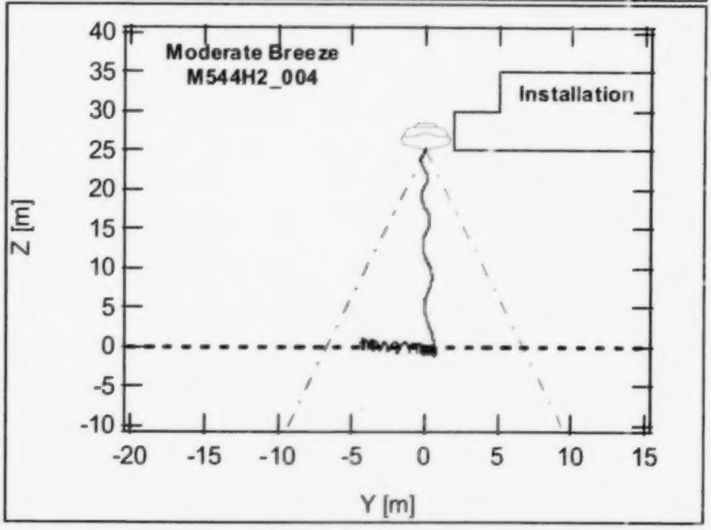
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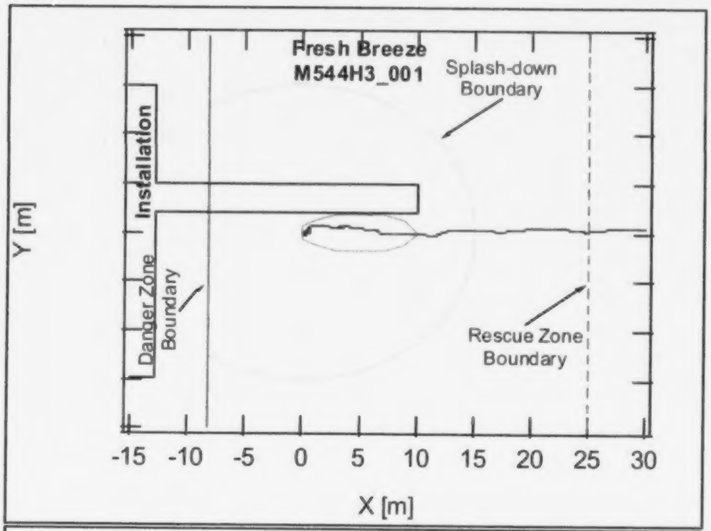
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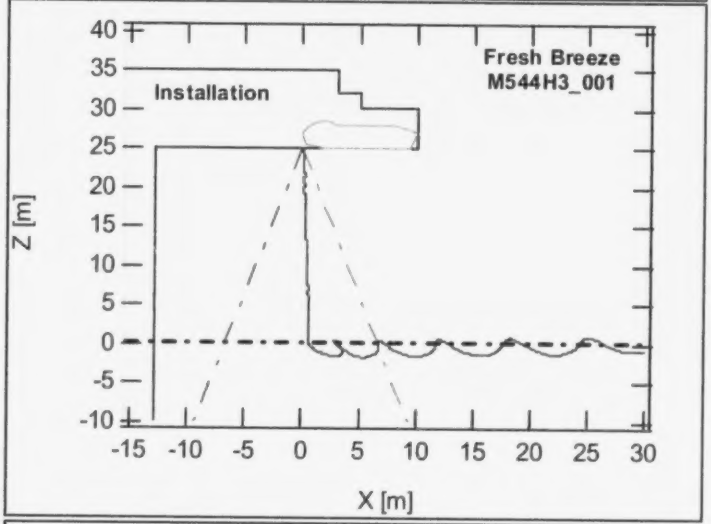
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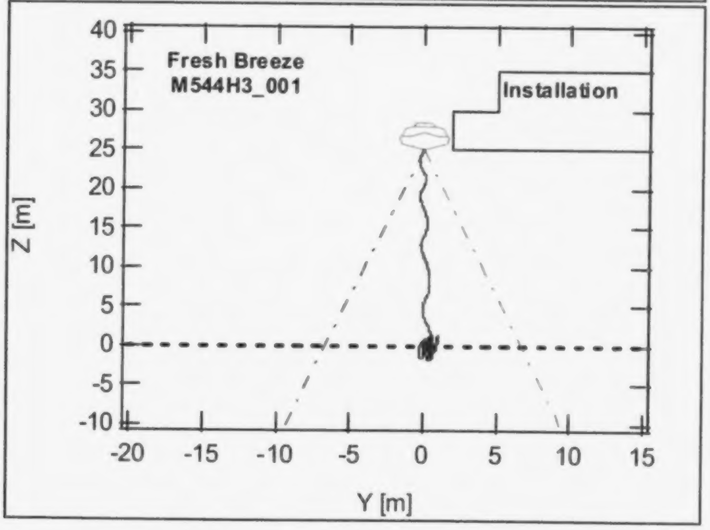
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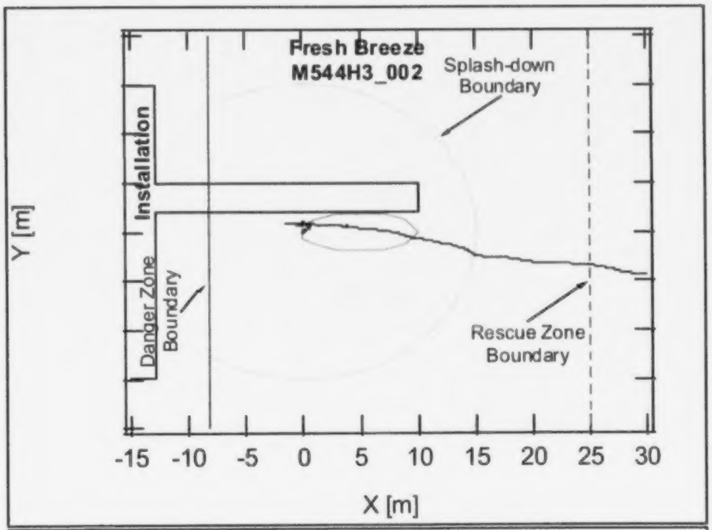
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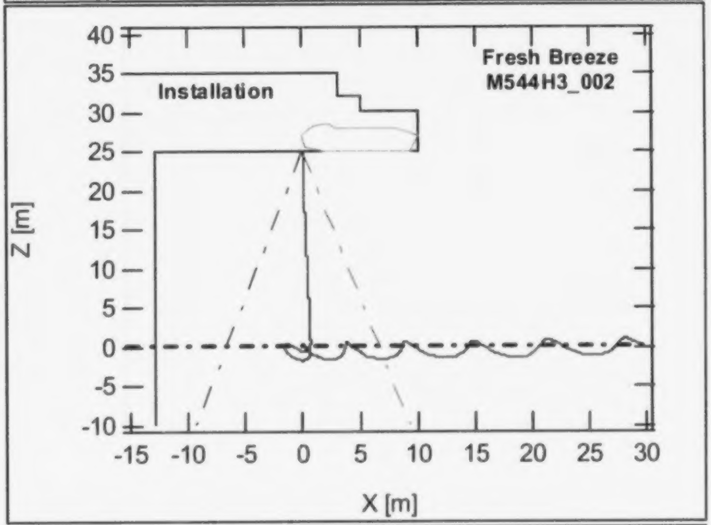
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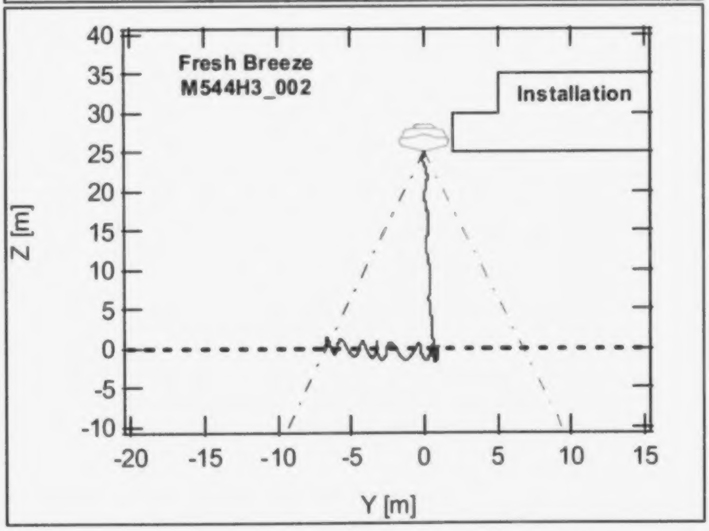
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Installation
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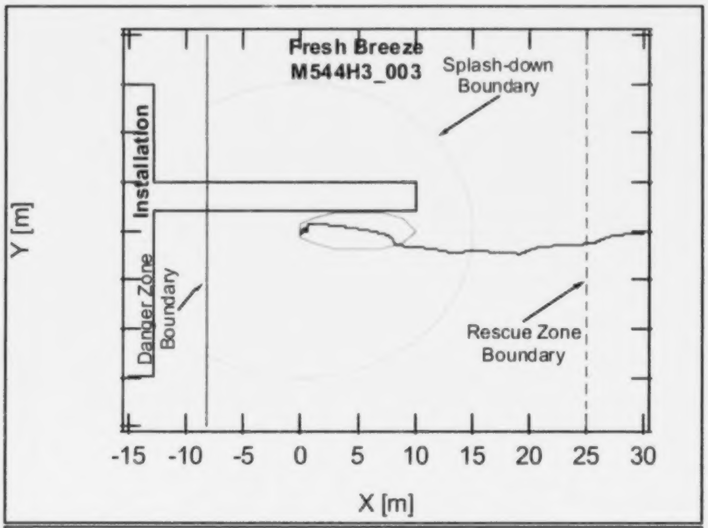
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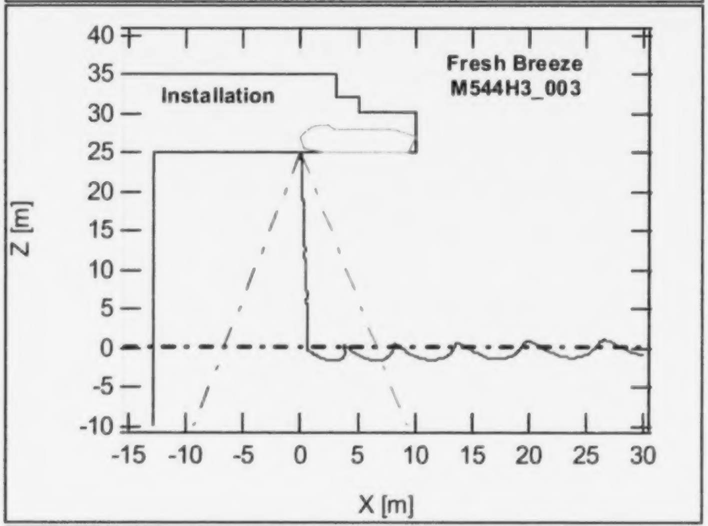
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Installation
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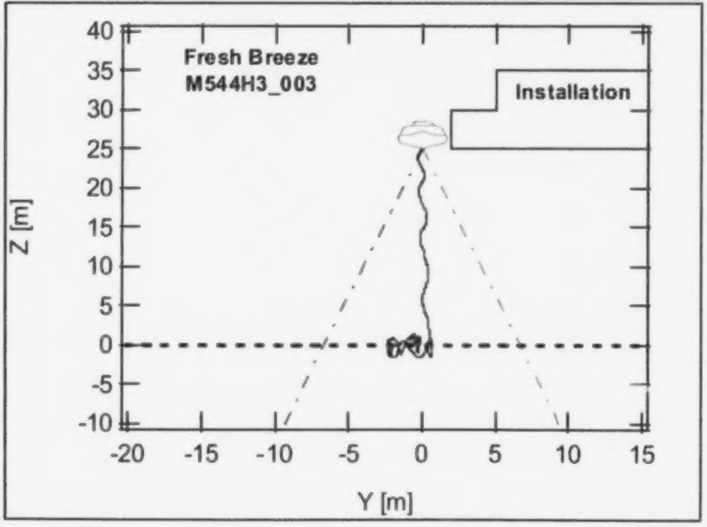
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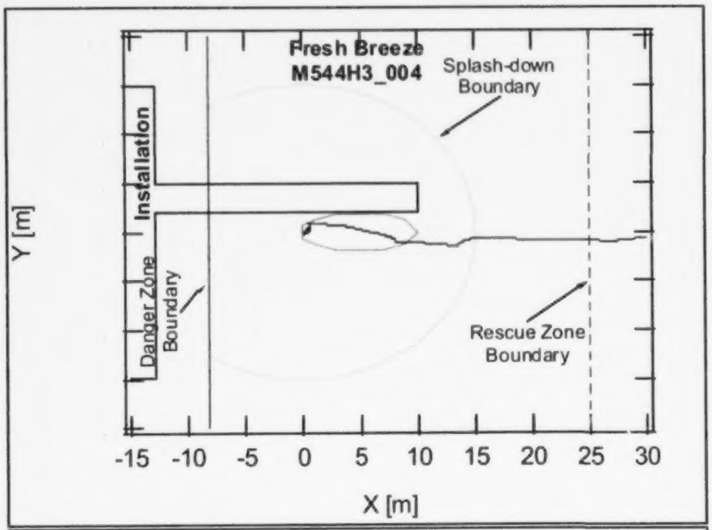
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Splash-down Boundary
Installation
Danger Zone Boundary
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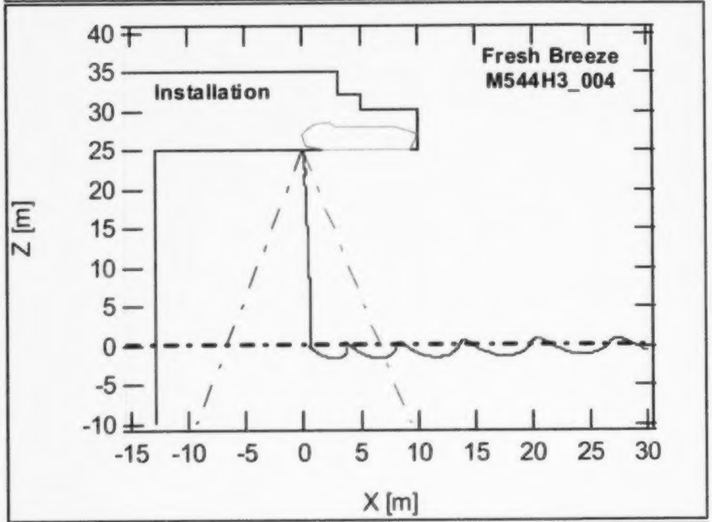
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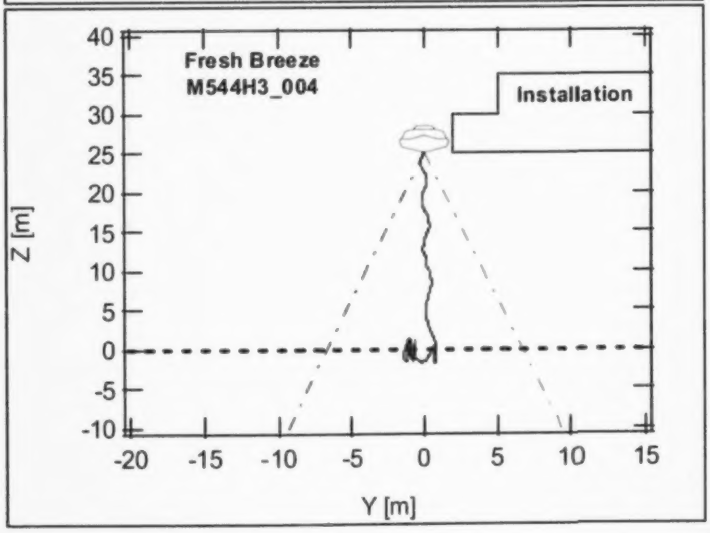
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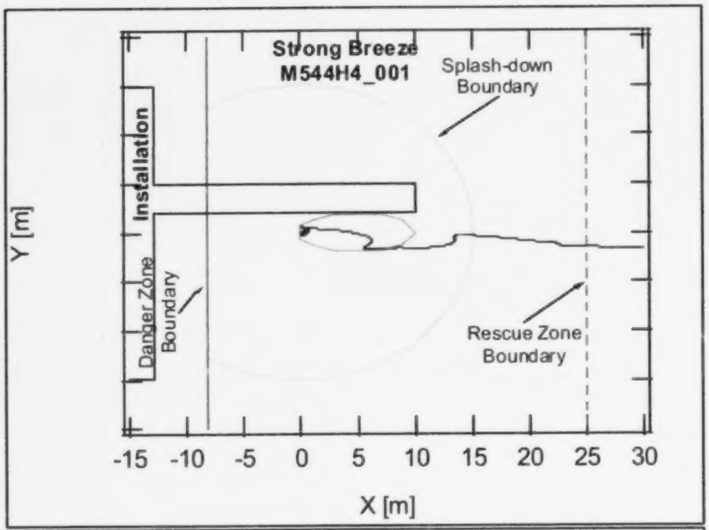
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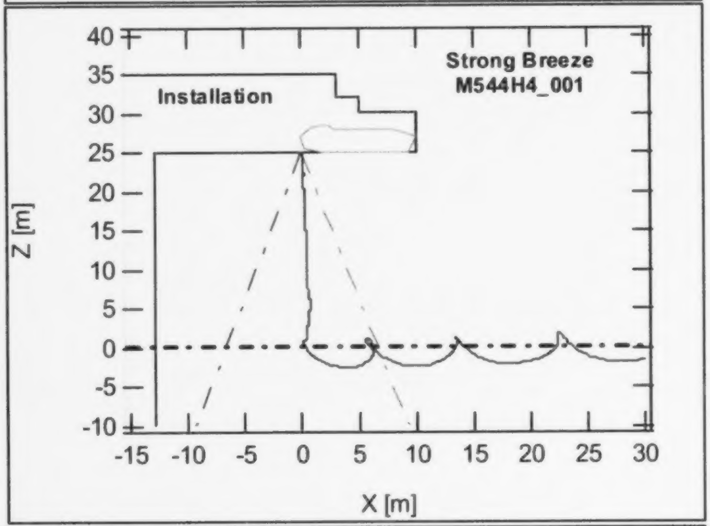
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Installation
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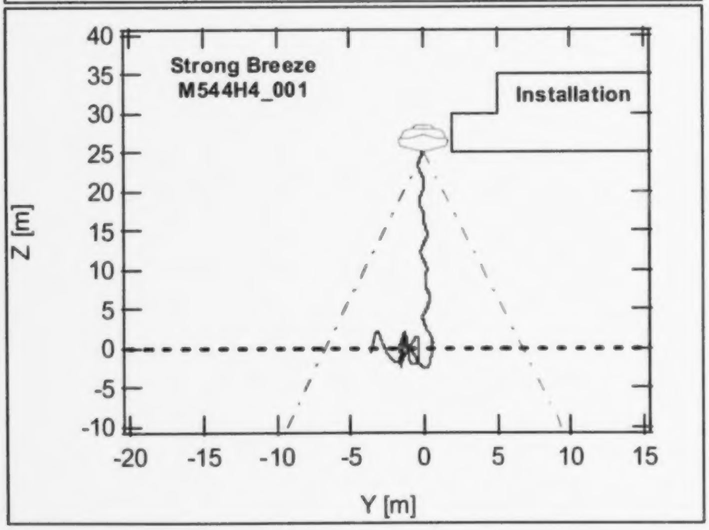
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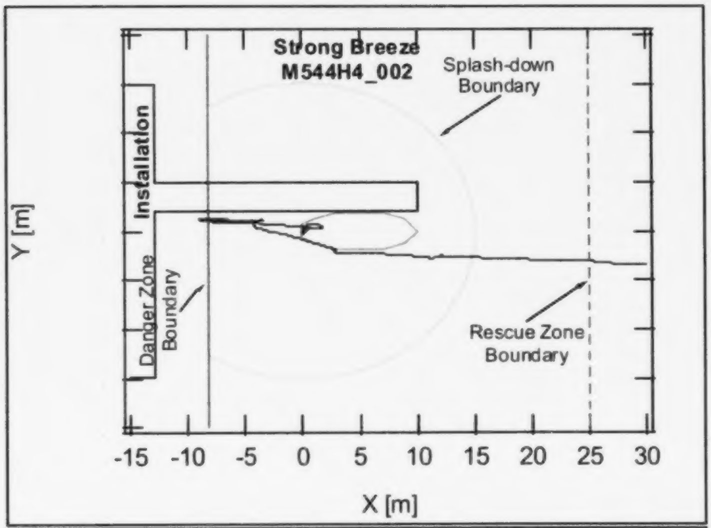
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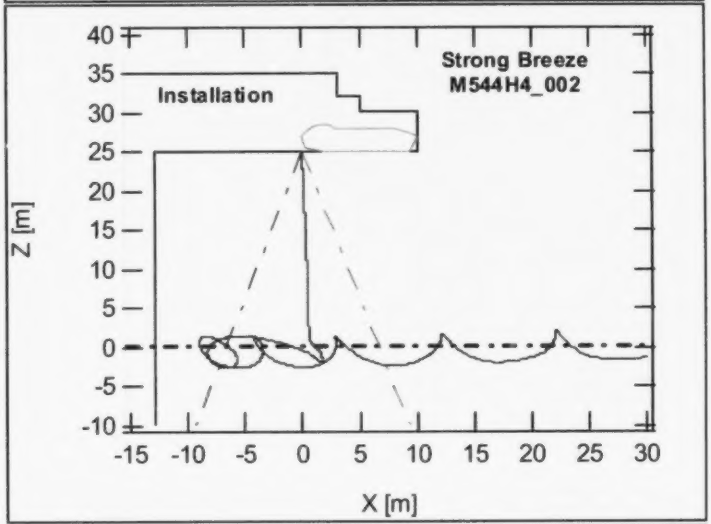
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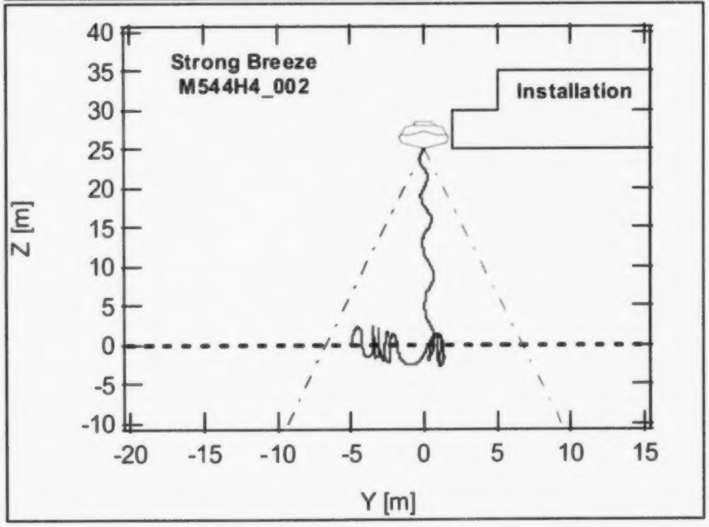
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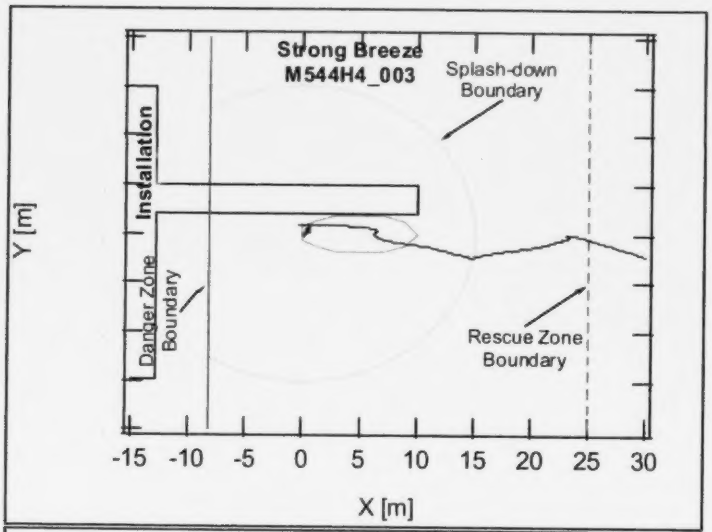
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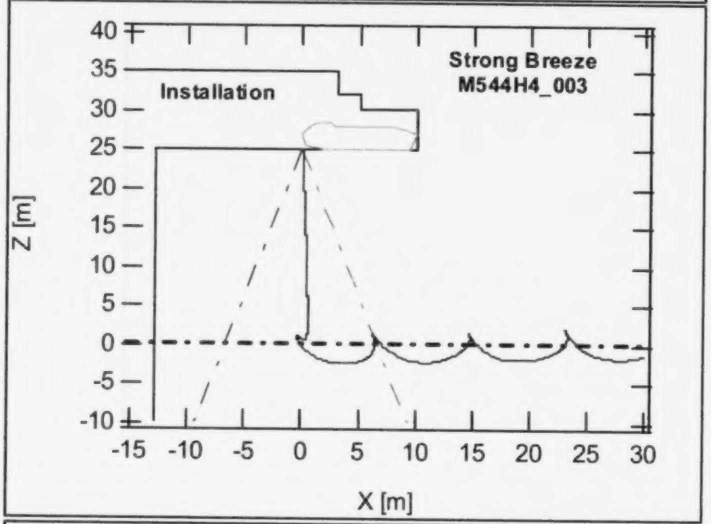
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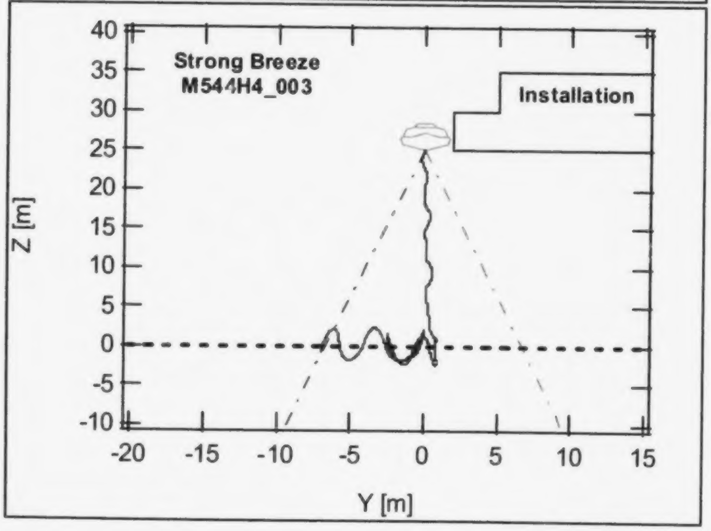
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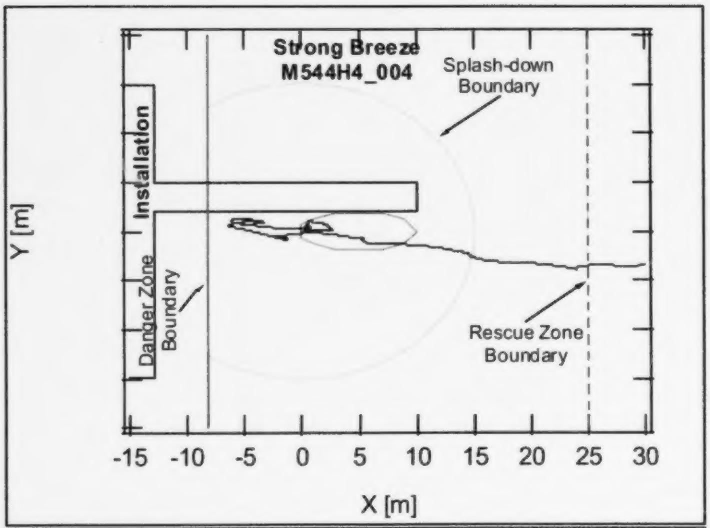
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Splash-down Boundary
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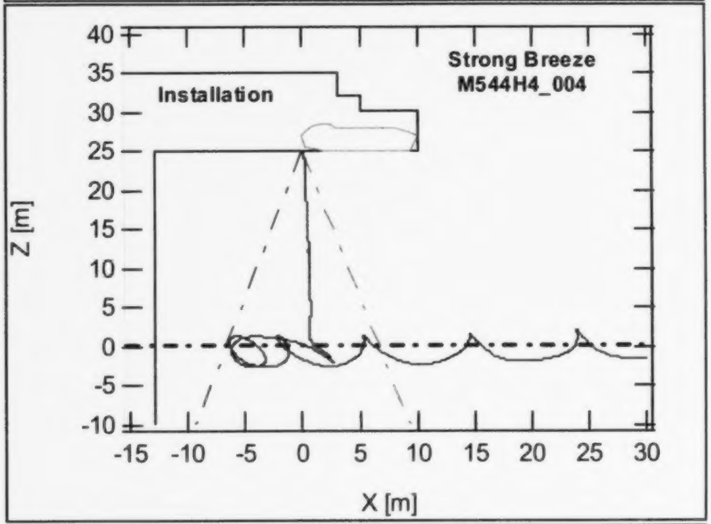
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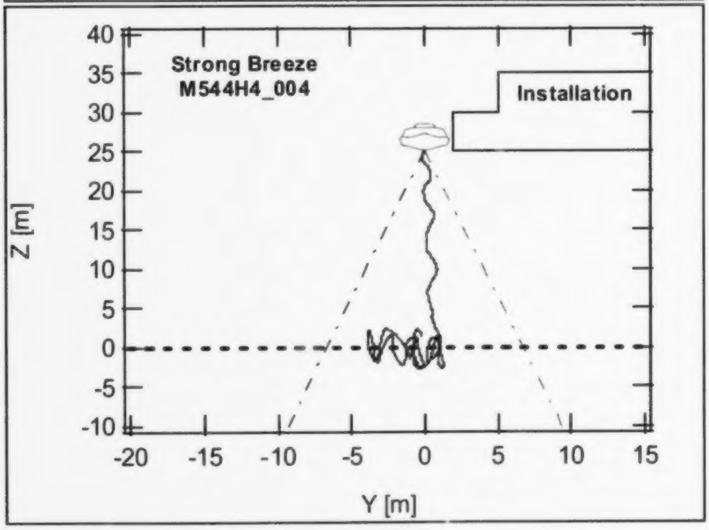
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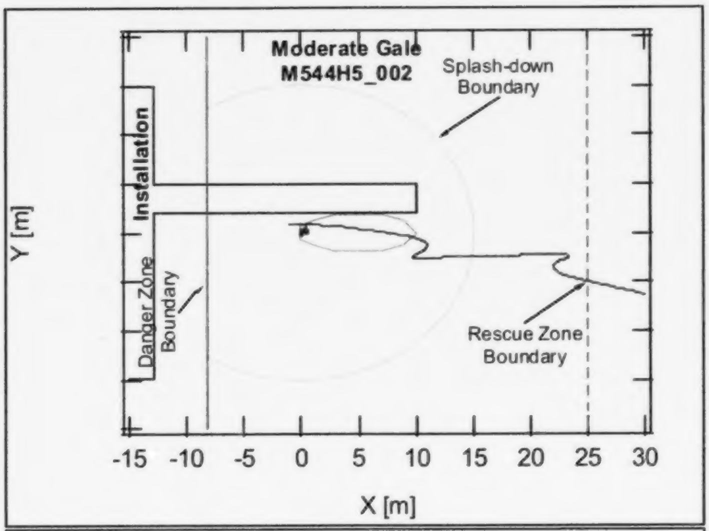
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Danger Zone
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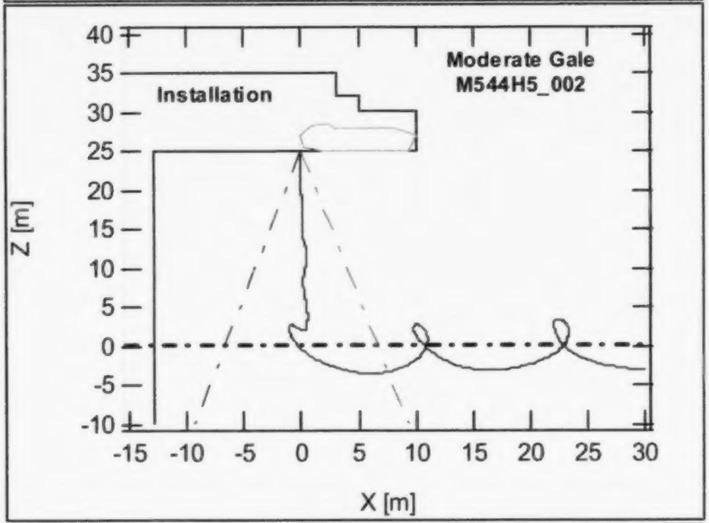
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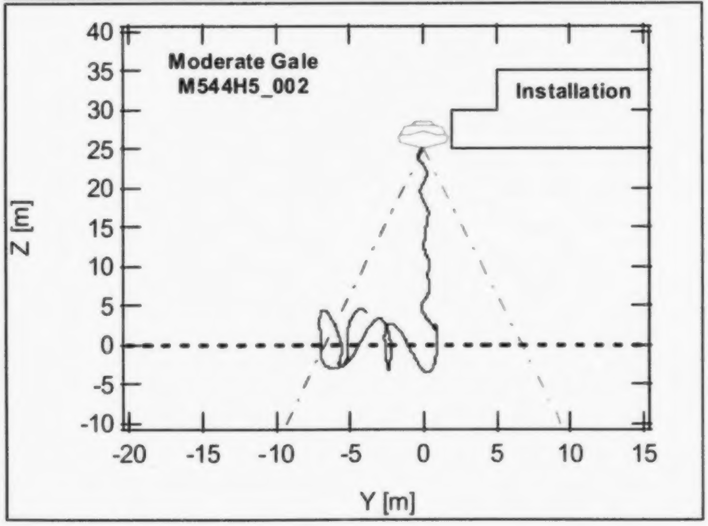
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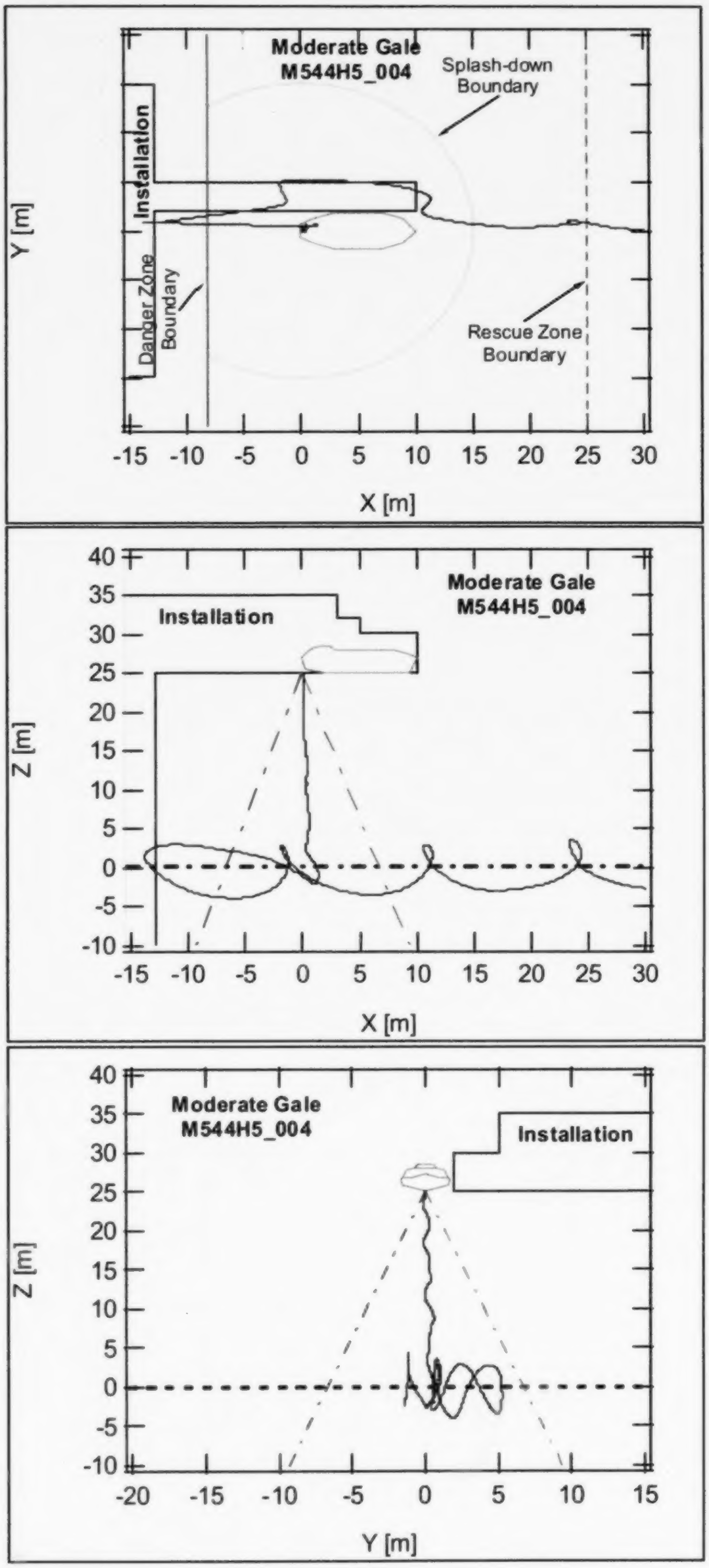
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Splash-down Boundary
Installation
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Danger Zone Boundary
Rescue Zone Boundary
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Moderate Gale
M544H5_004
Installation
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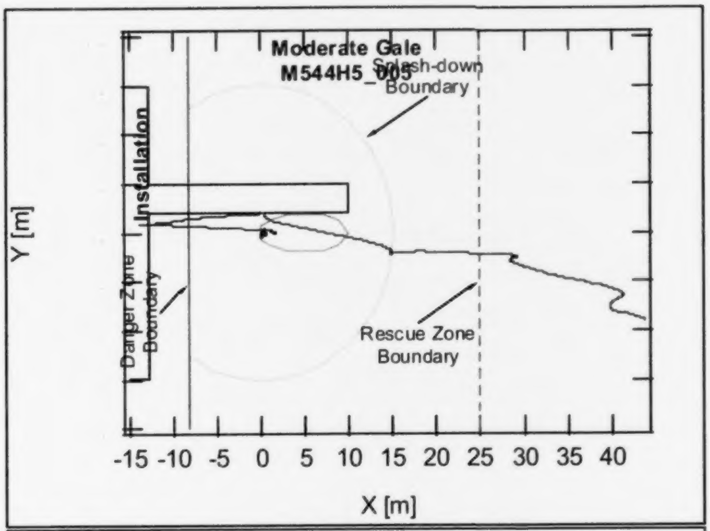
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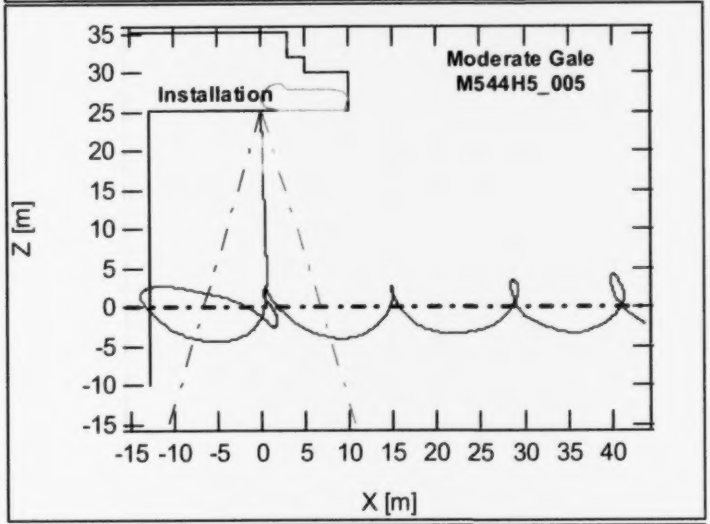
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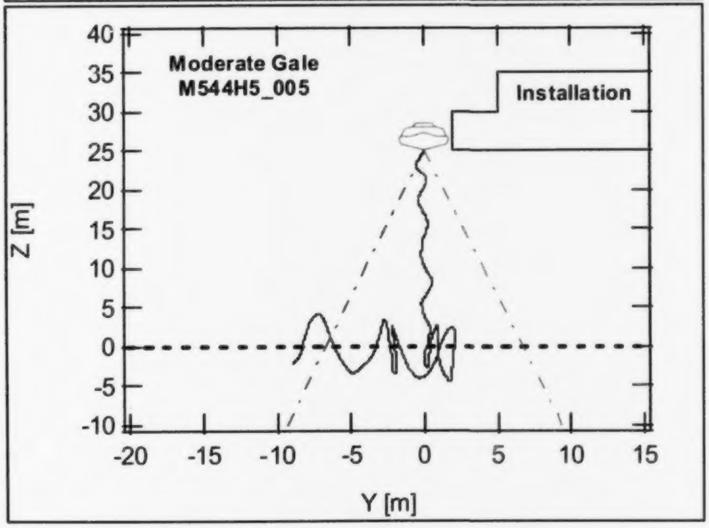
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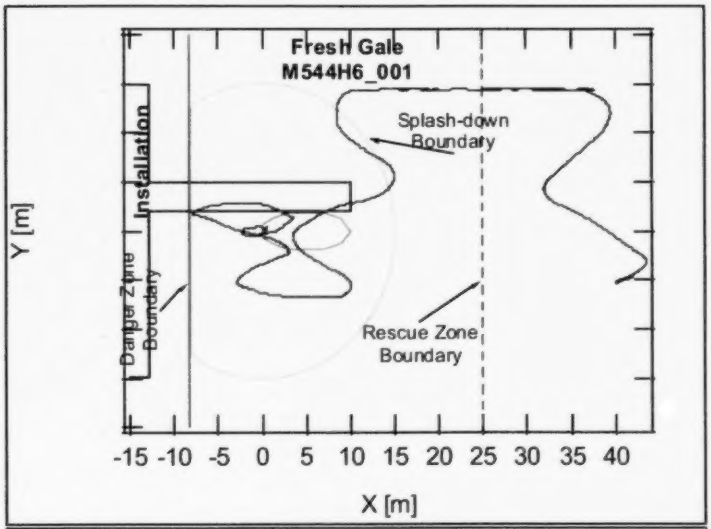
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Splash-down
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Danger Zone
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Rescue Zone
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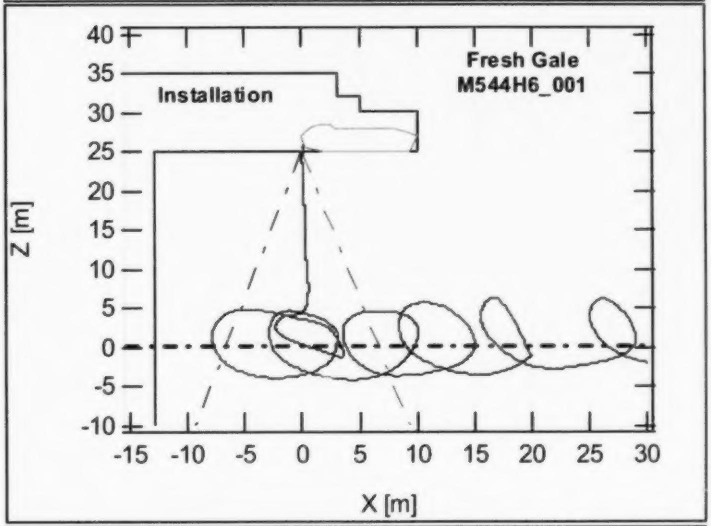
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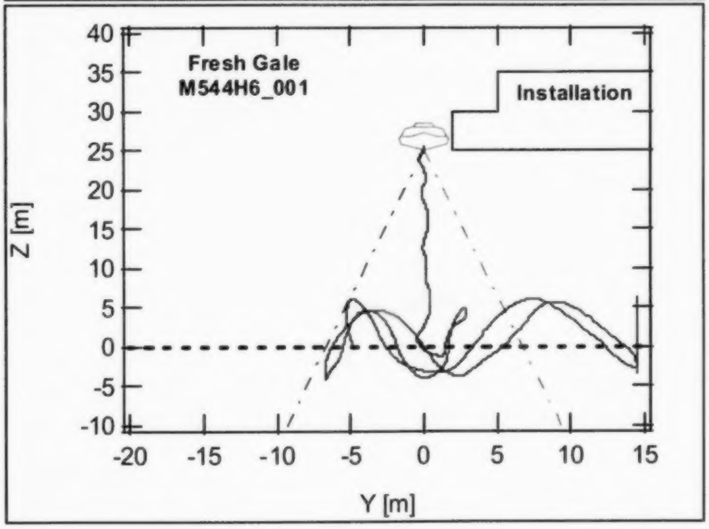
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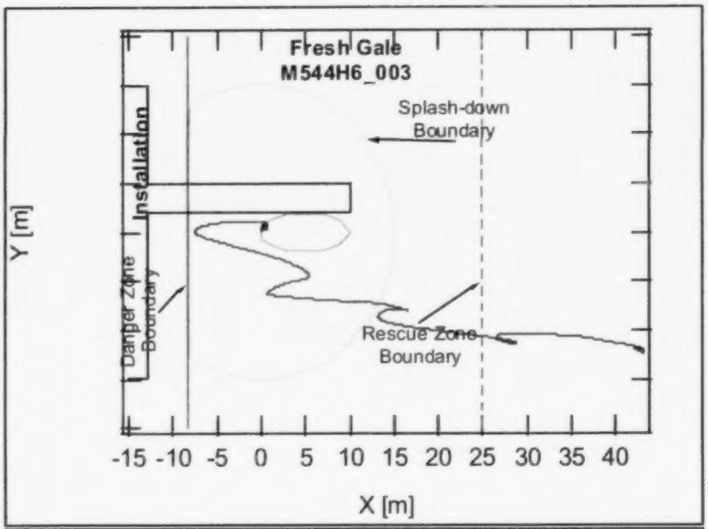
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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-10
-5
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35
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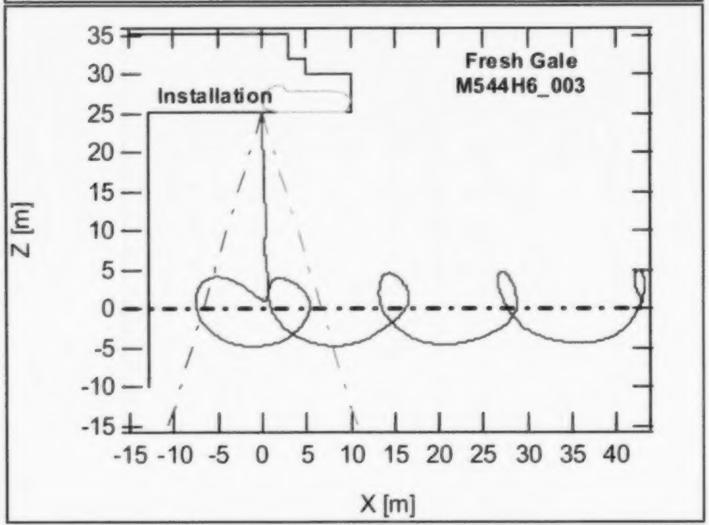
X [m]


Installation
Fresh Gale
M544H6_003
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15
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-5
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-15
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-15
-10
-5
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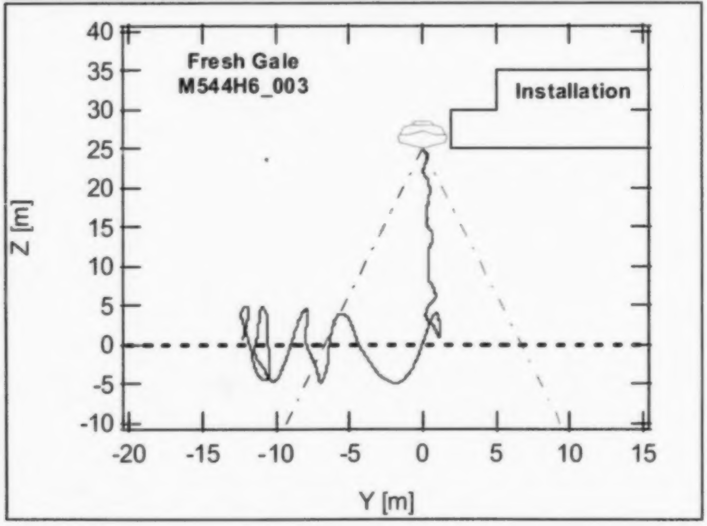
X [m]


Fresh Gale
M544H6_003
Installation
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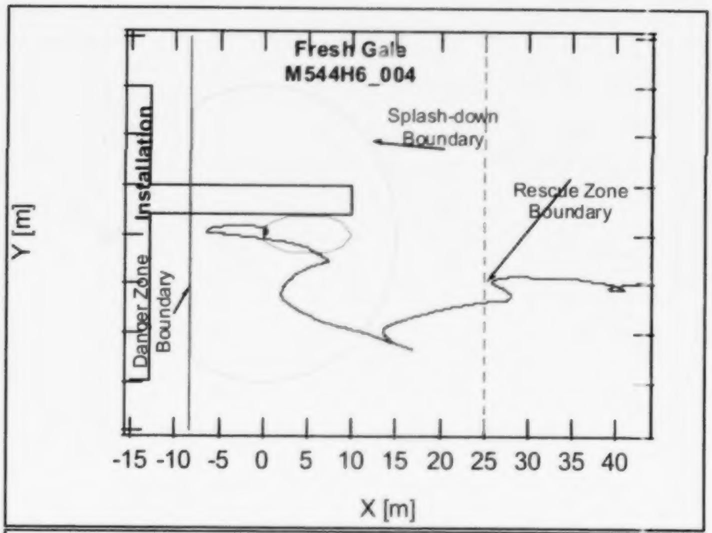
Y [m]


Fresh Gale
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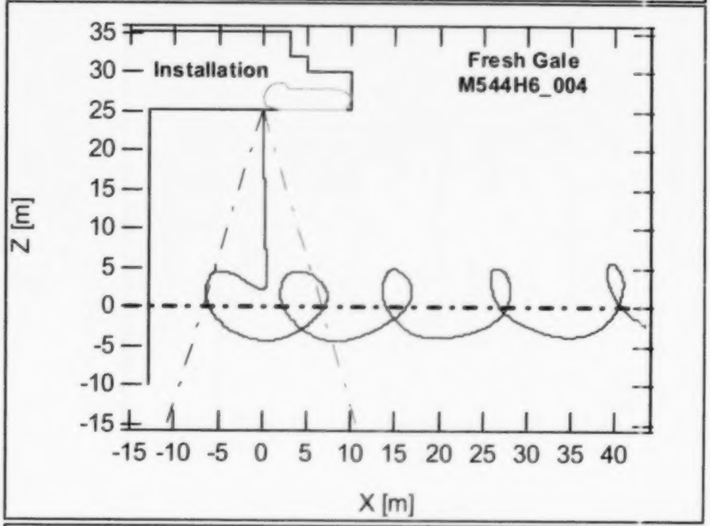
Splash-down Boundary
Rescue Zone Boundary
Installation
Danger Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Installation
Fresh Gale
M544H6_004
Z [m]
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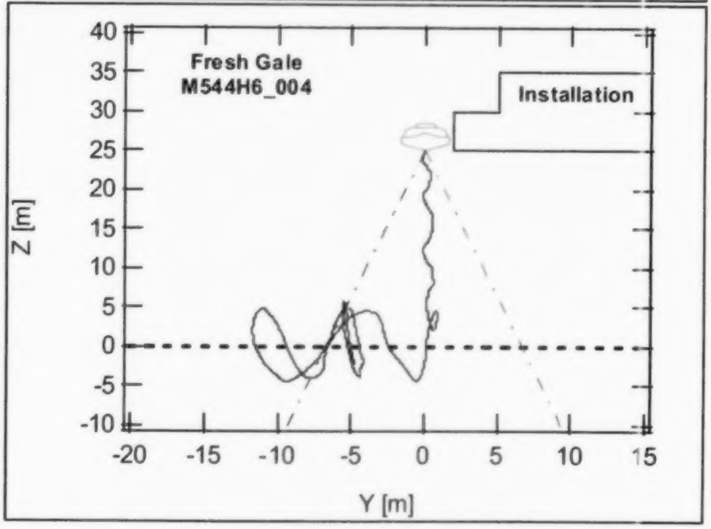
-10
-15
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Fresh Gale
M544H6_004
Installation
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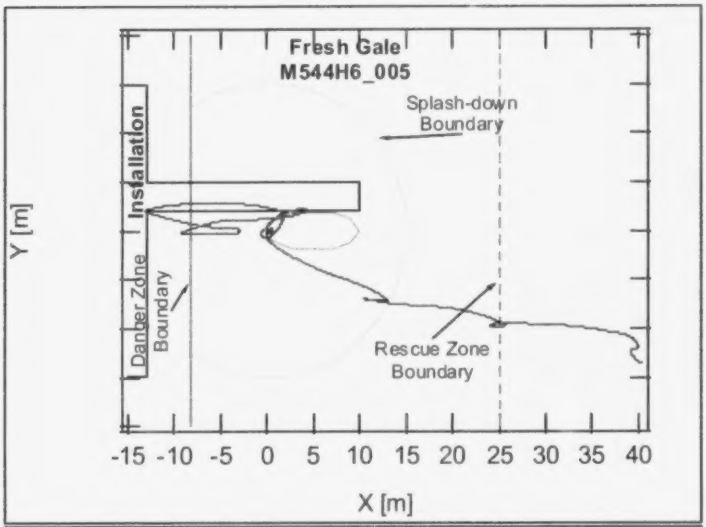
-20 -15 -10 -5 0 5 10 15
Y [m]


Fresh Gale
M544H6_005
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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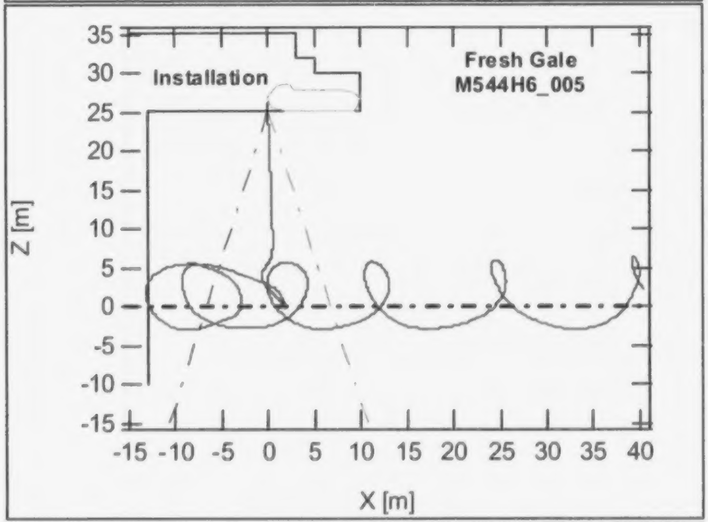
X [m]


Installation
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M544H6_005
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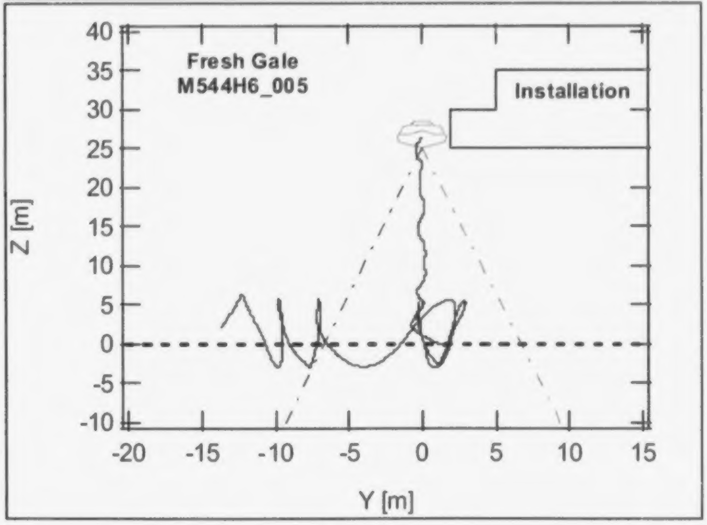
X [m]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Installation
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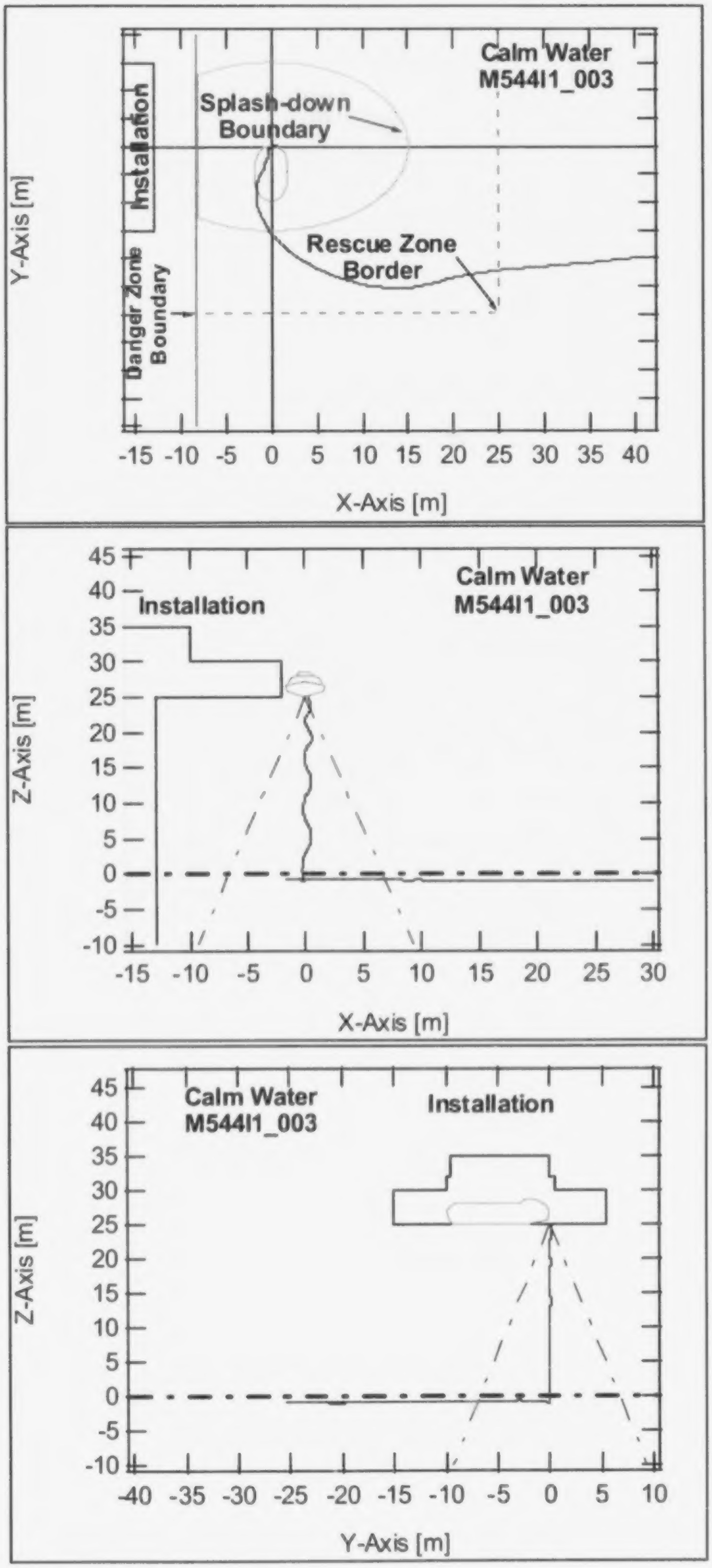
Y [m]


Calm Water
M544I1_003
Splash-down
Boundary
Installation
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]
Calm Water
M544I1_003
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Calm Water
M544I1_003
Installation
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Z-Axis [m]
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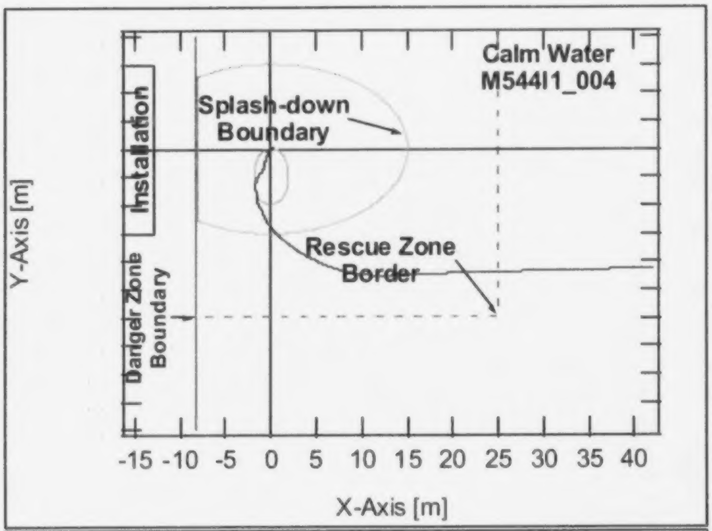
Y-Axis [m]


Calm Water
M544I1_004
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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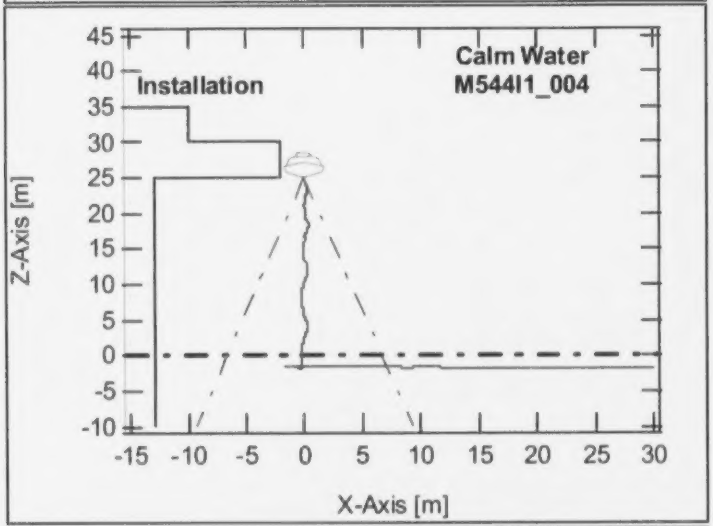
X-Axis [m]


Calm Water
M544I1_004
Installation
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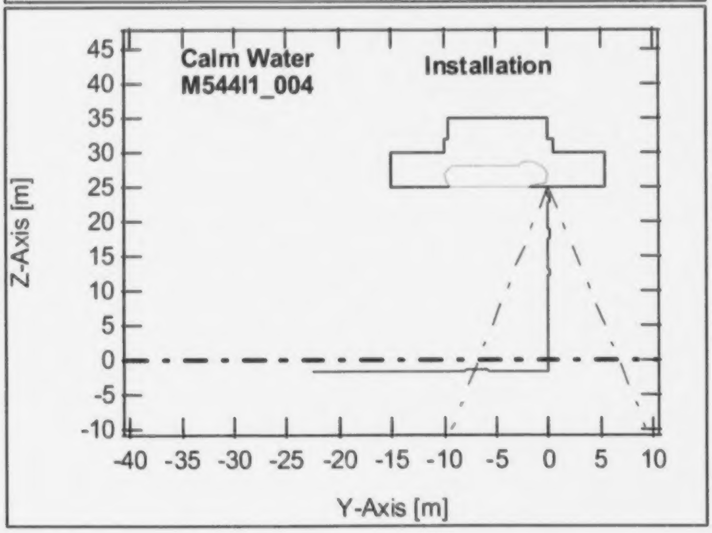
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544I1_004
Installation
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Z-Axis [m]
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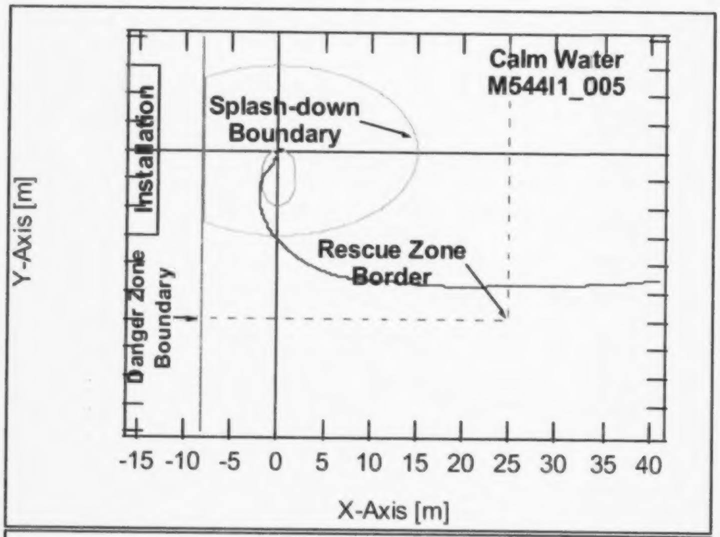
Y-Axis [m]


Calm Water
M544I1_005
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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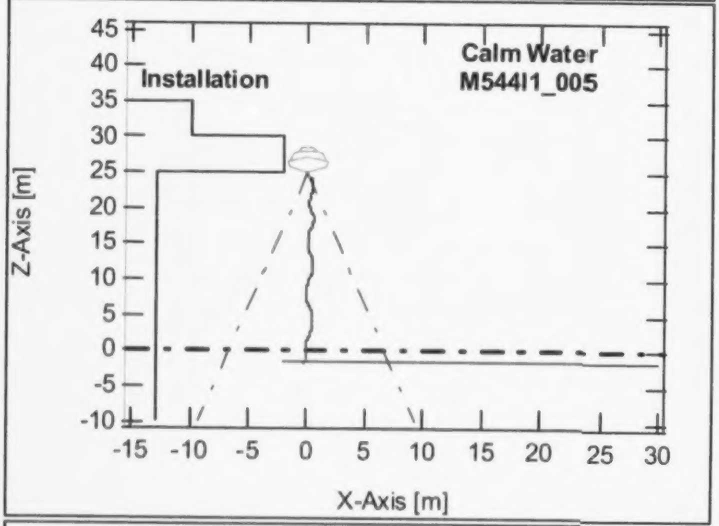
X-Axis [m]


Calm Water
M544I1_005
Installation
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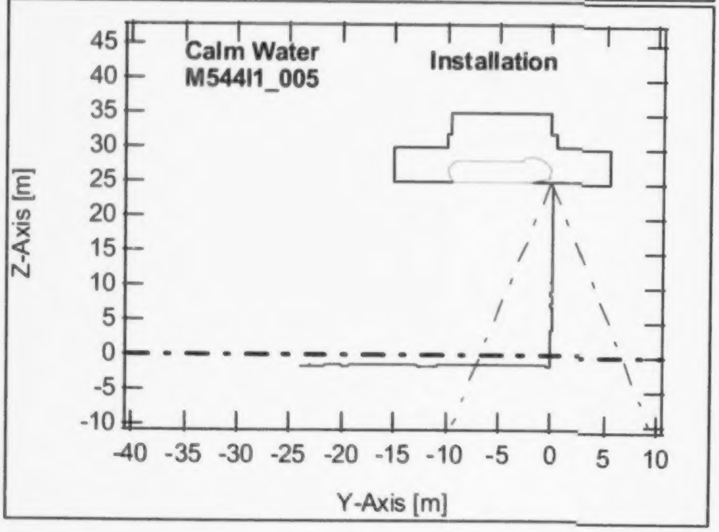
0
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544I1_005
Installation
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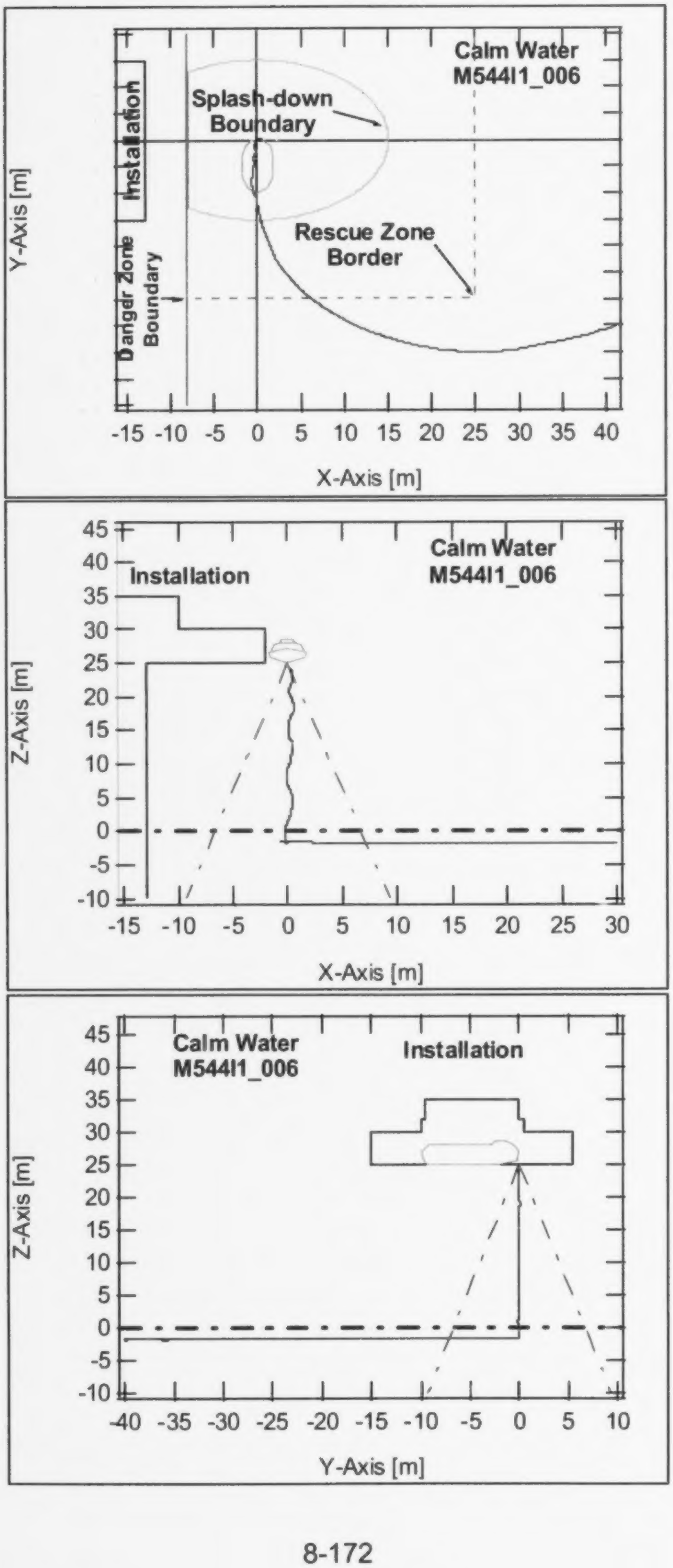
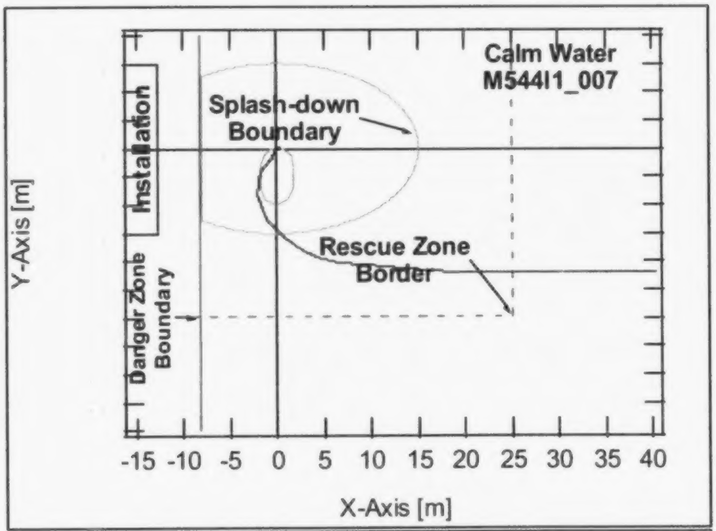
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544I1_006
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
X-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
Calm Water
M544I1_006
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Calm Water
M544I1_006
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544I1_007
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
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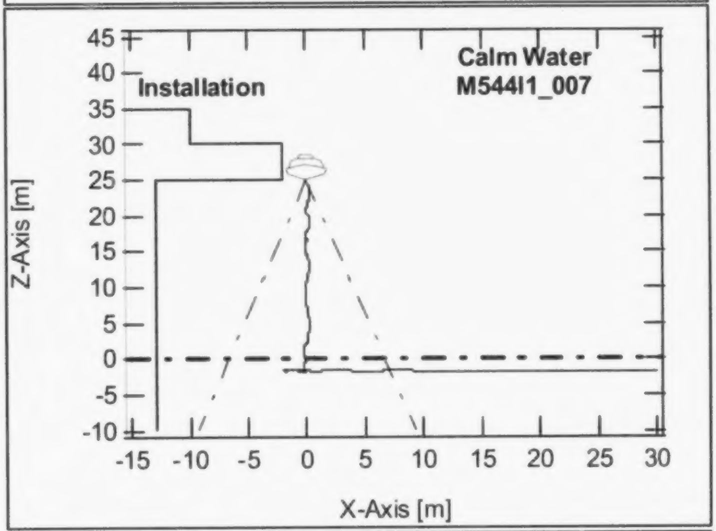
X-Axis [m]


Calm Water
M544I1_007
Installation
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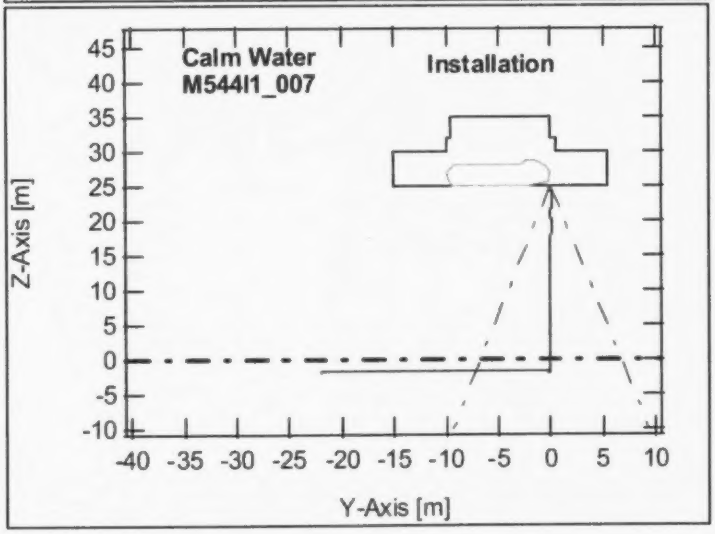
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544I1_007
Installation
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Z-Axis [m]
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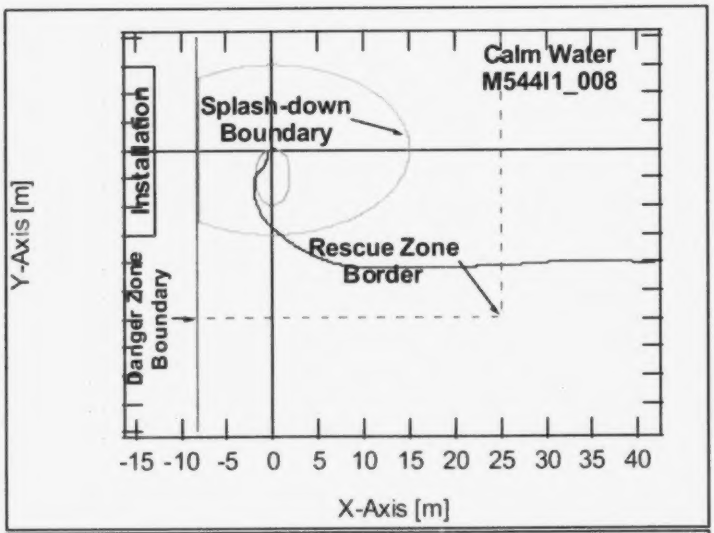
Y-Axis [m]


Calm Water
M544I1_008
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
X-Axis [m]
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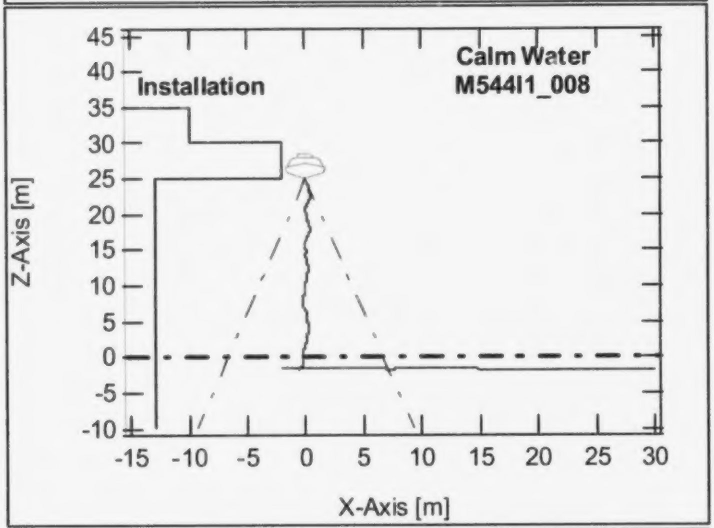
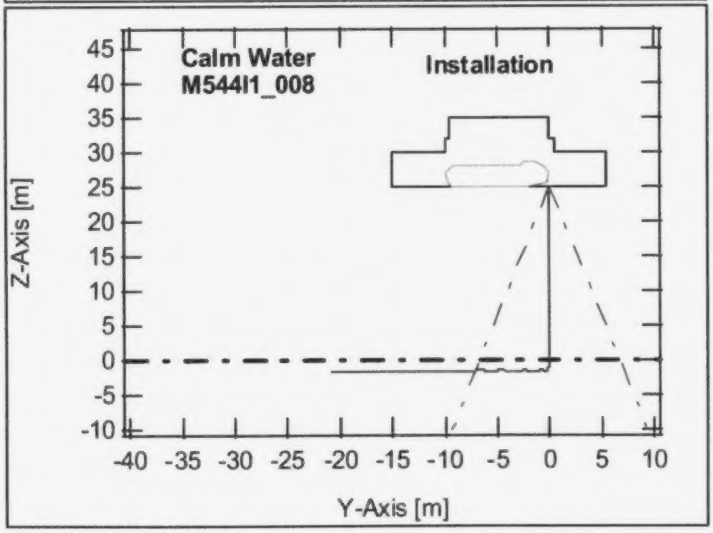

Installation
Calm Water
M544I1_008
Z-Axis [m]
X-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30


Calm Water
M544I1_008
Installation
Z-Axis [m]
Y-Axis [m]
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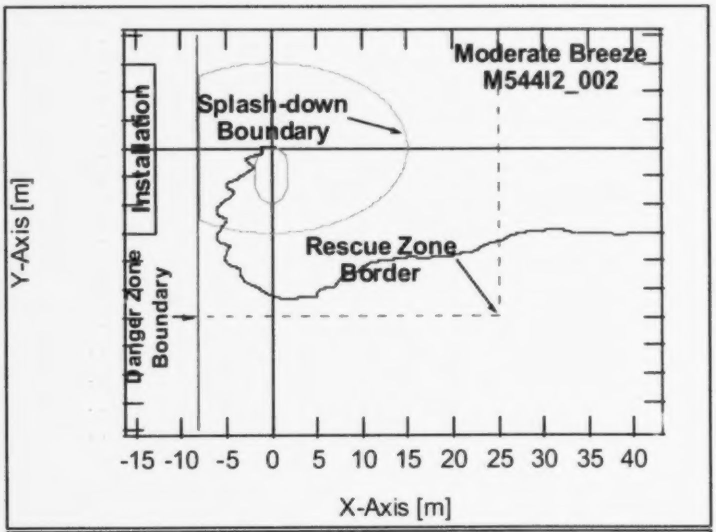
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10


Moderate Breeze
M544I2_002
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
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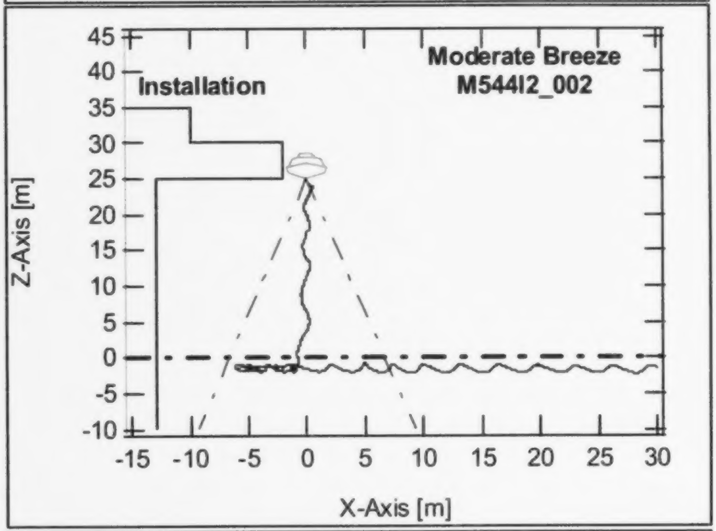
X-Axis [m]


Moderate Breeze
M544I2_002
Installation
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Z-Axis [m]
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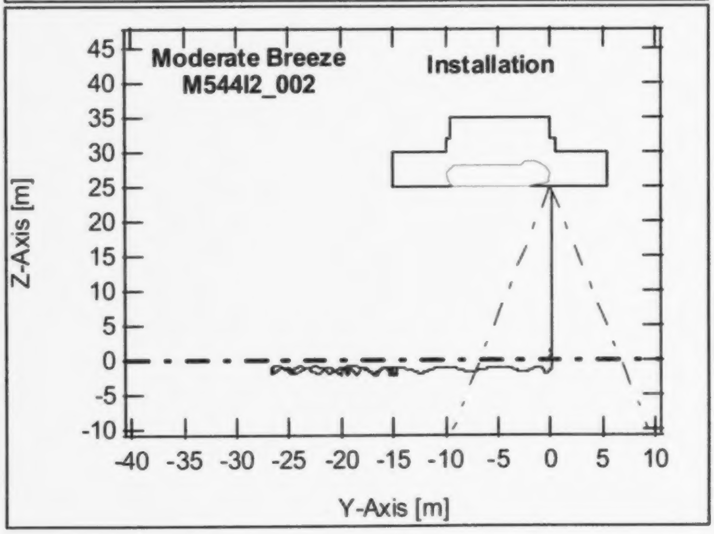
X-Axis [m]


Moderate Breeze
M544I2_002
Installation
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Z-Axis [m]
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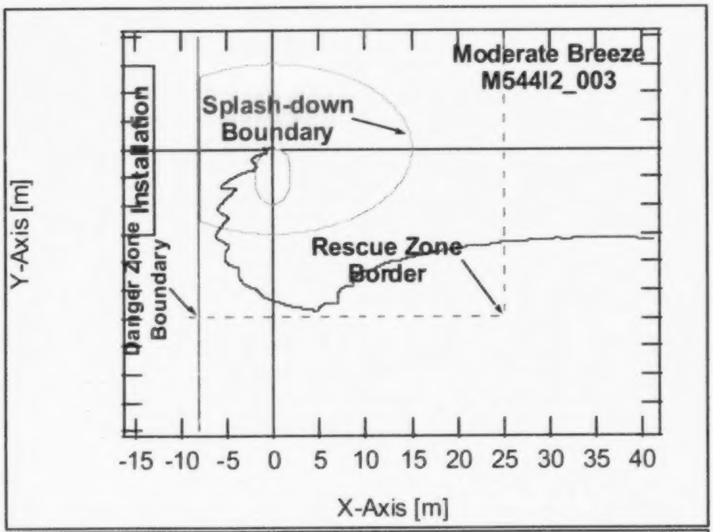
Y-Axis [m]


Moderate Breeze
M544I2_003
Splash-down
Boundary
Installation
Y-Axis [m]
Rescue Zone
Border
Danger Zone
Boundary
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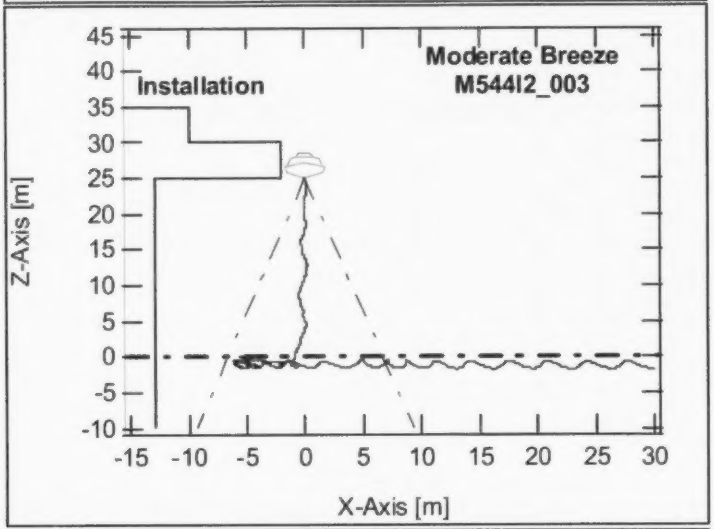
X-Axis [m]


Moderate Breeze
M544I2_003
Installation
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Z-Axis [m]
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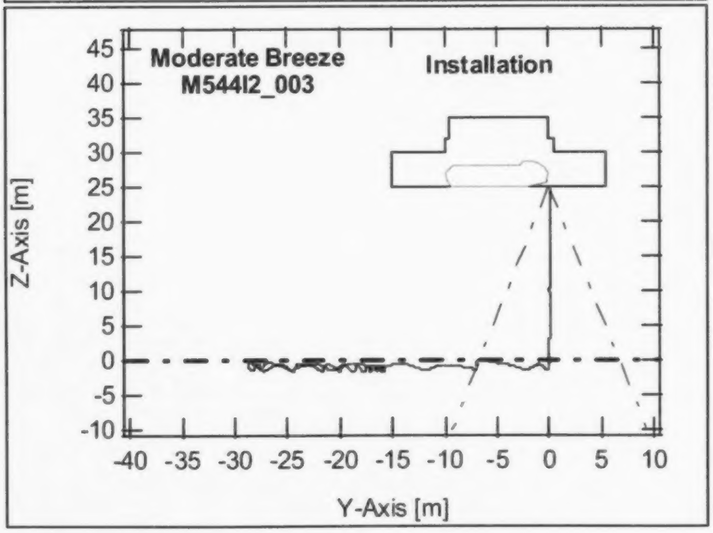
X-Axis [m]


Moderate Breeze
M544I2_003
Installation
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Z-Axis [m]
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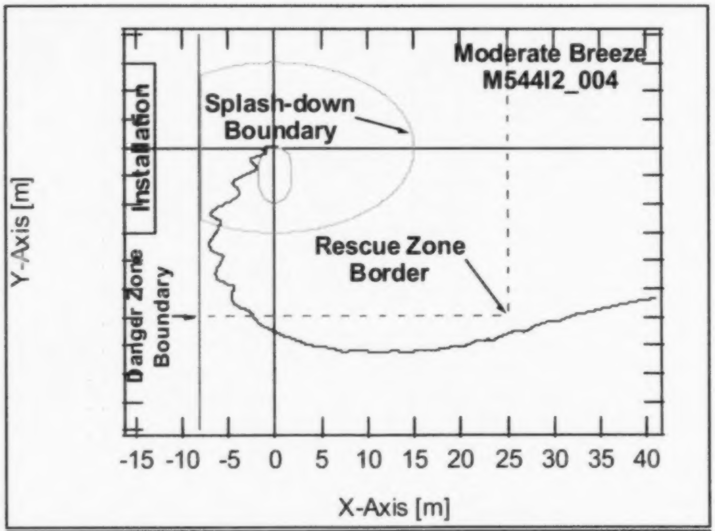
Y-Axis [m]


Moderate Breeze
M544I2_004
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
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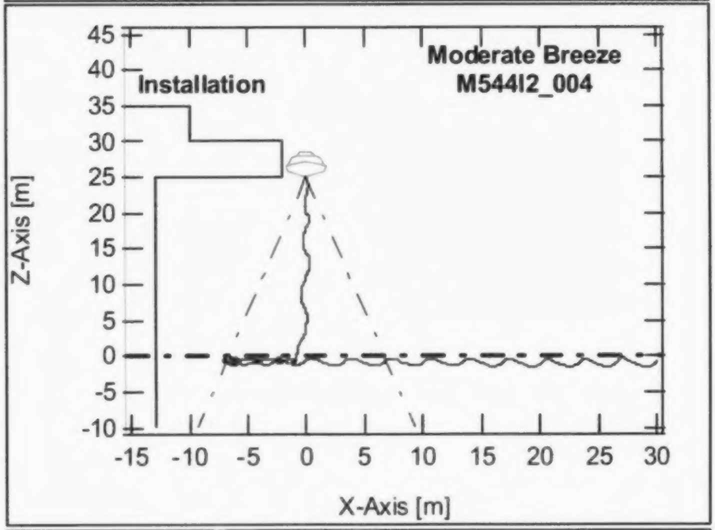
X-Axis [m]


Moderate Breeze
M544I2_004
Installation
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Z-Axis [m]
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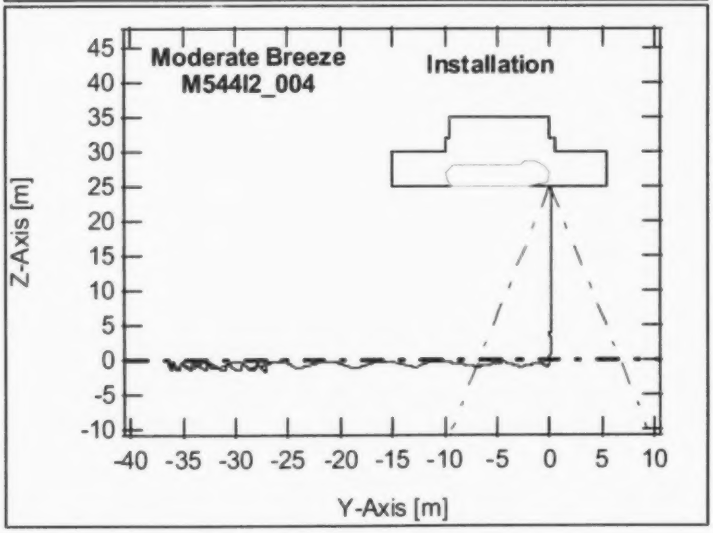
X-Axis [m]


Moderate Breeze
M544I2_004
Installation
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Z-Axis [m]
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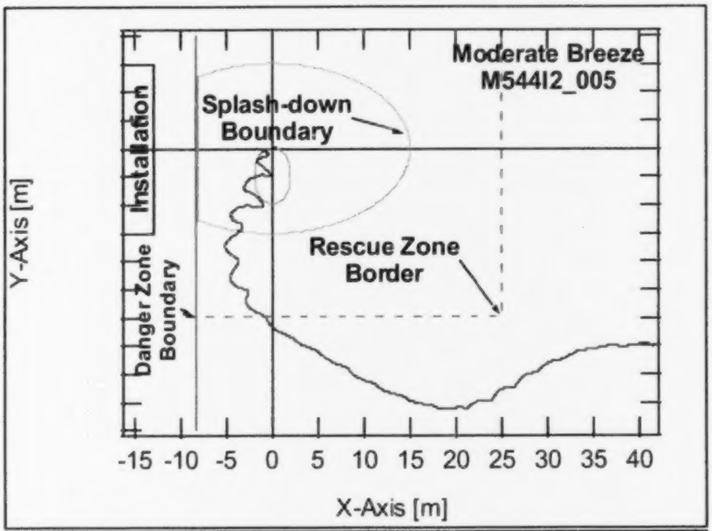
Y-Axis [m]


Moderate Breeze
M544I2_005
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
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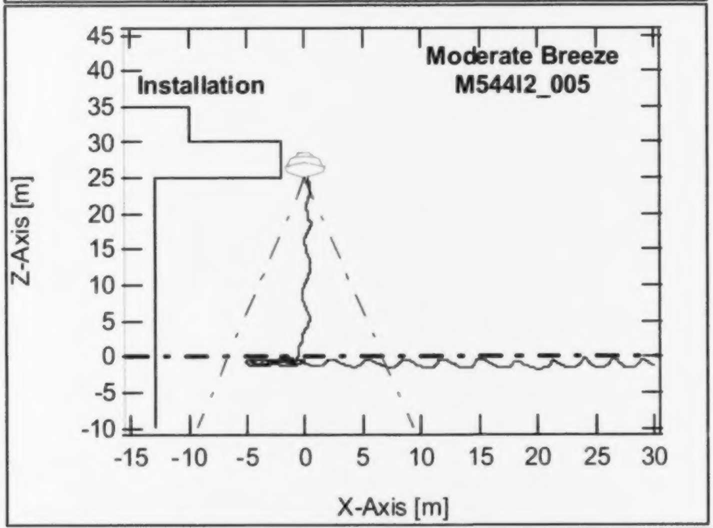
X-Axis [m]


Moderate Breeze
M544I2_005
Installation
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Z-Axis [m]
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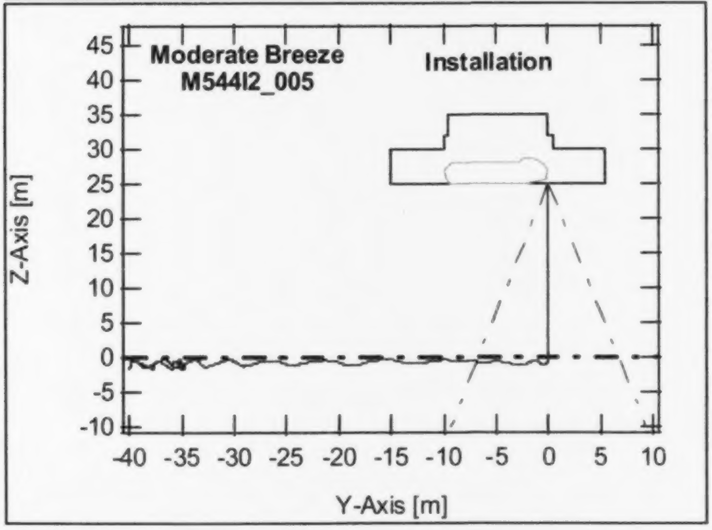
X-Axis [m]


Moderate Breeze
M544I2_005
Installation
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Z-Axis [m]
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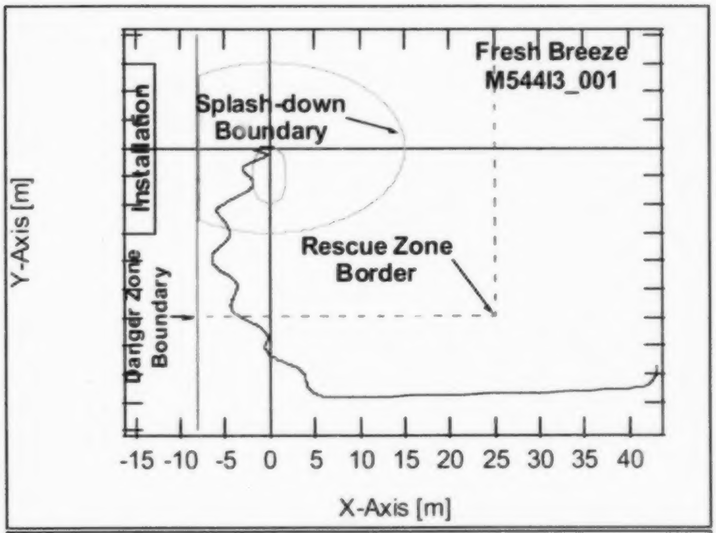
Y-Axis [m]


Fresh Breeze
M544I3_001
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
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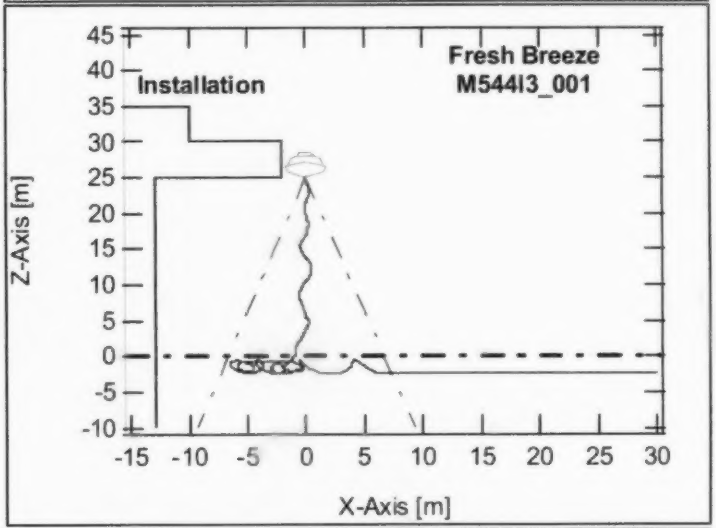
X-Axis [m]


Fresh Breeze
M544I3_001
Installation
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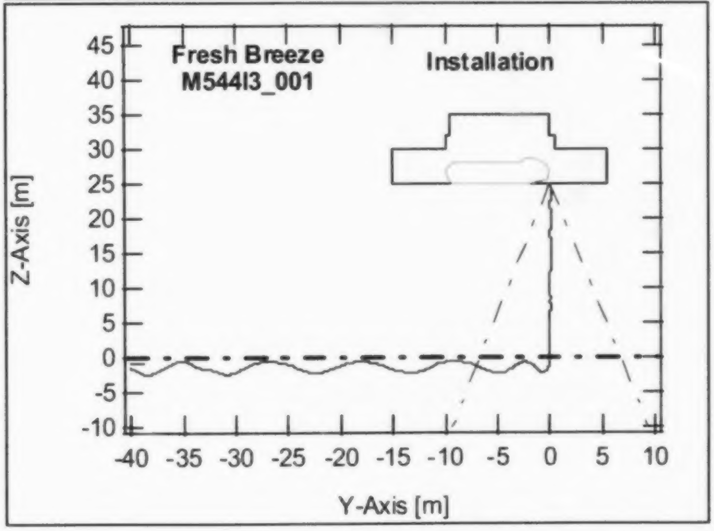
X-Axis [m]


Fresh Breeze
M544I3_001
Installation
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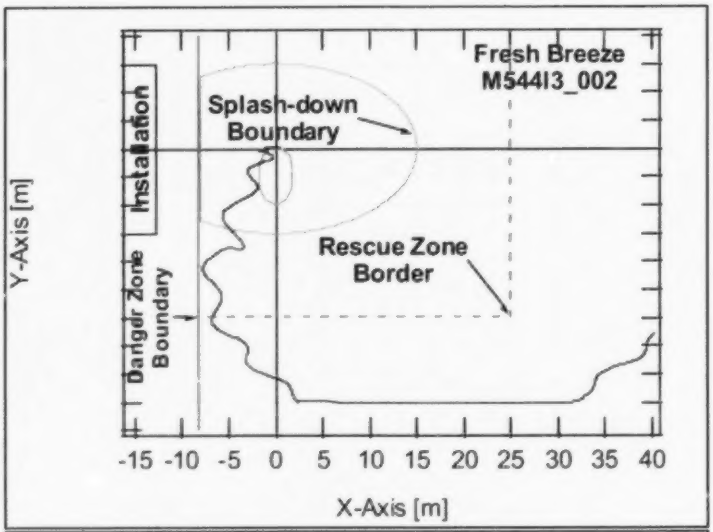
Y-Axis [m]


Fresh Breeze
M544I3_002
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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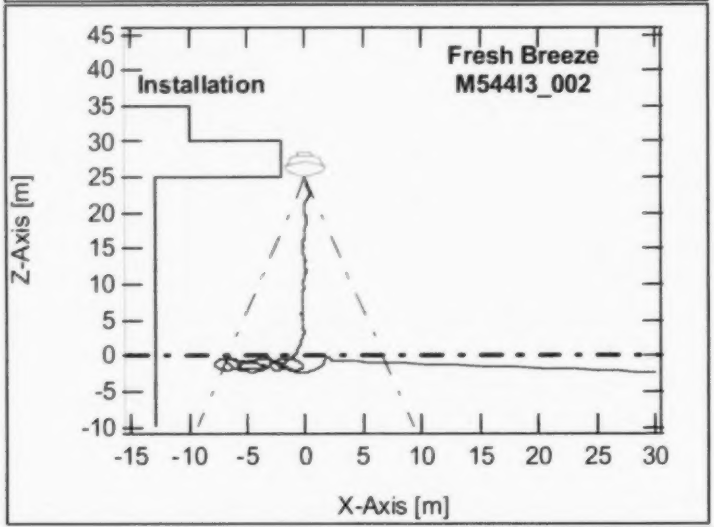
X-Axis [m]


Fresh Breeze
M544I3_002
Installation
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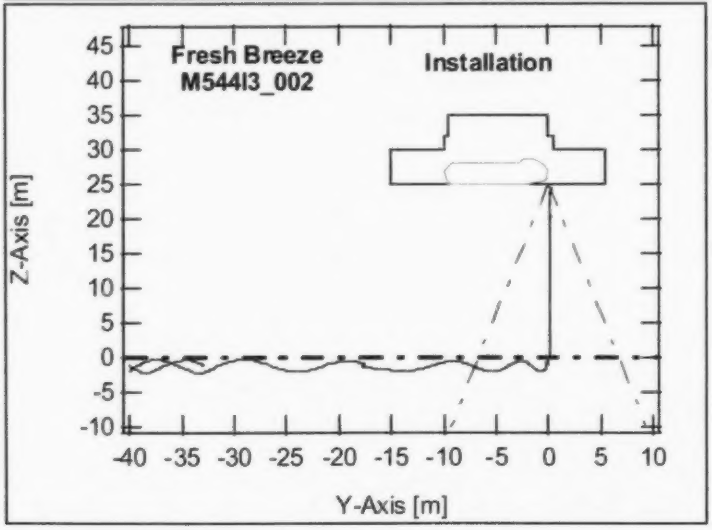
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]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M544I3_002
Installation
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Z-Axis [m]
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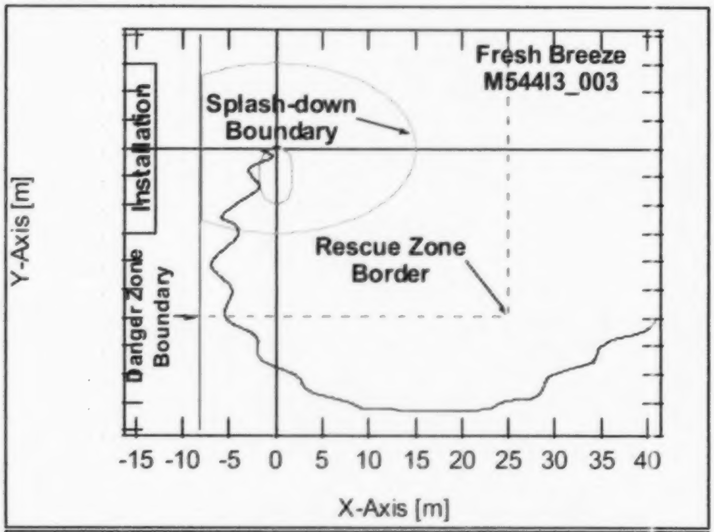
Y-Axis [m]


Fresh Breeze
M544I3_003
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
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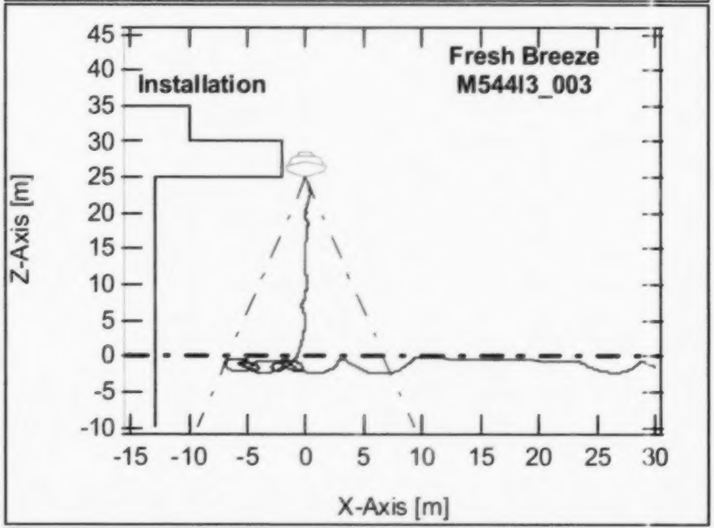
X-Axis [m]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M544I3_003
Installation
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Z-Axis [m]
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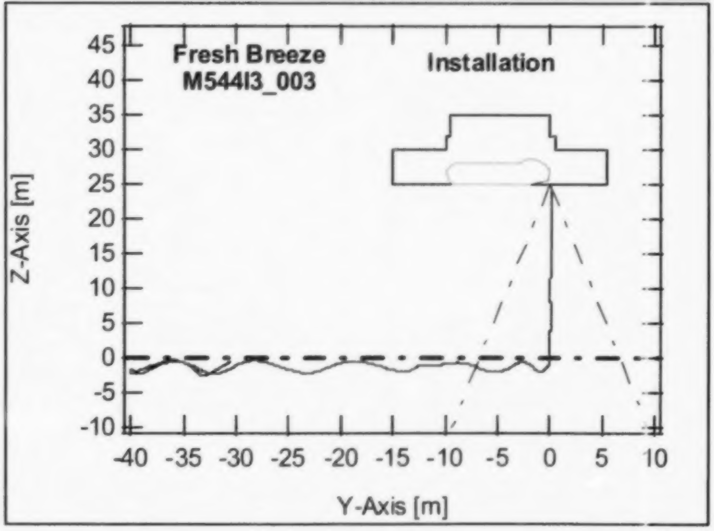
X-Axis [m]


Fresh Breeze
M544I3_003
Installation
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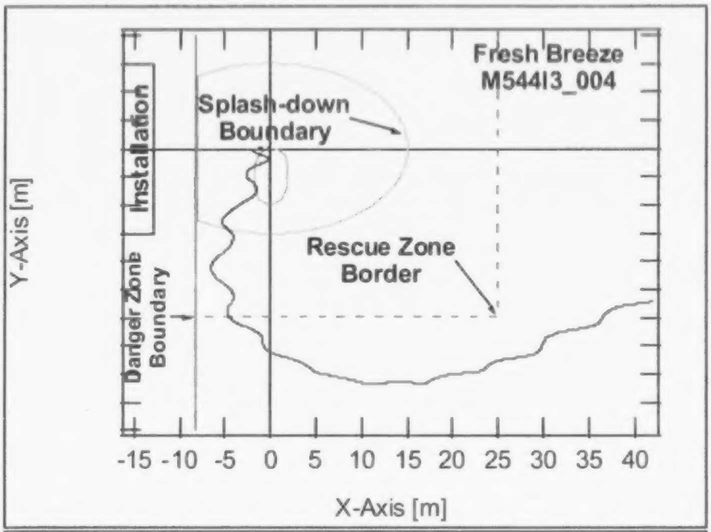
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Breeze
M544I3_004
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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-10
-5
0
5
10
15
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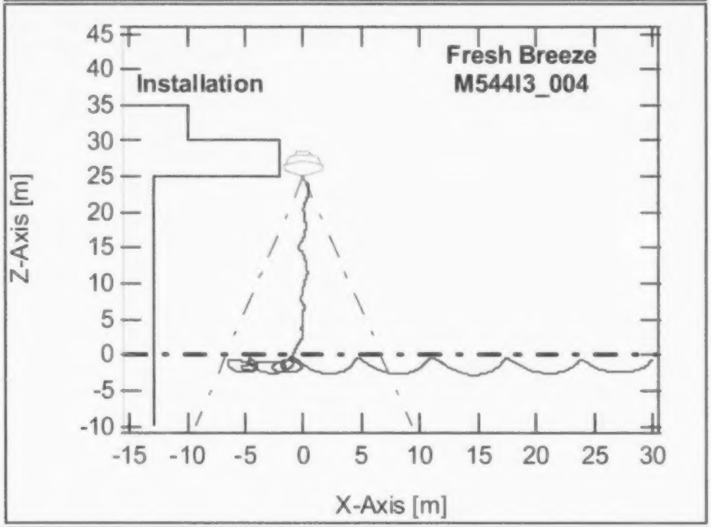
25
30
35
40
X-Axis [m]


Fresh Breeze
M544I3_004
Installation
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30
25
20
15
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-5
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Z-Axis [m]
-15
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-5
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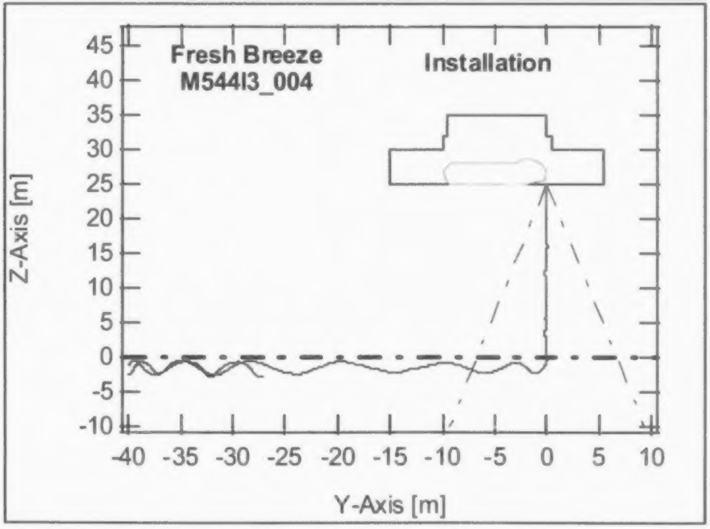
X-Axis [m]


Fresh Breeze
M544I3_004
Installation
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25
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0
-5
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Z-Axis [m]
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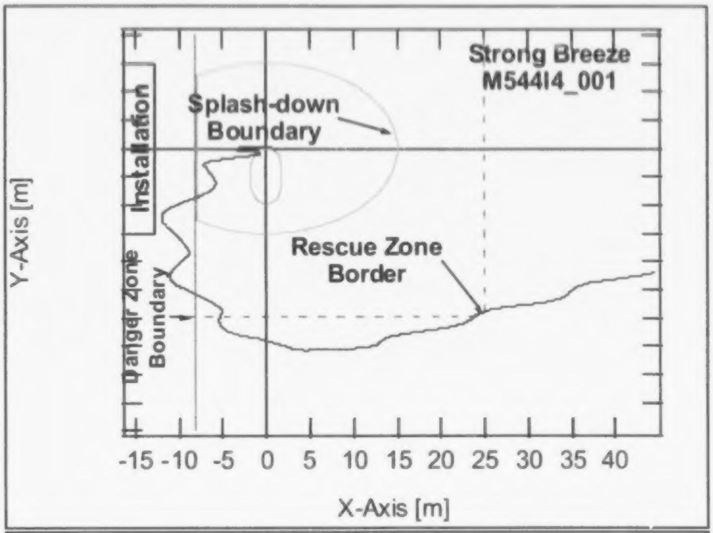
Y-Axis [m]


Strong Breeze
M544I4_001
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
X-Axis [m]
-15
-10
-5
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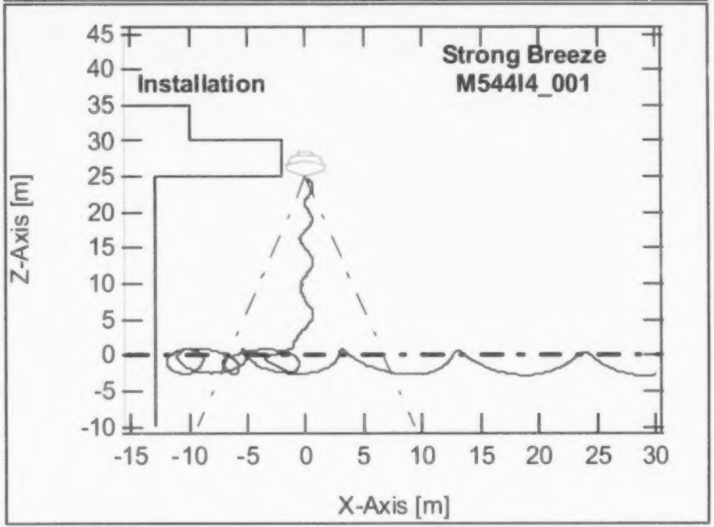
Installation
Strong Breeze
M544I4_001
Z-Axis [m]
X-Axis [m]
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40
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-5
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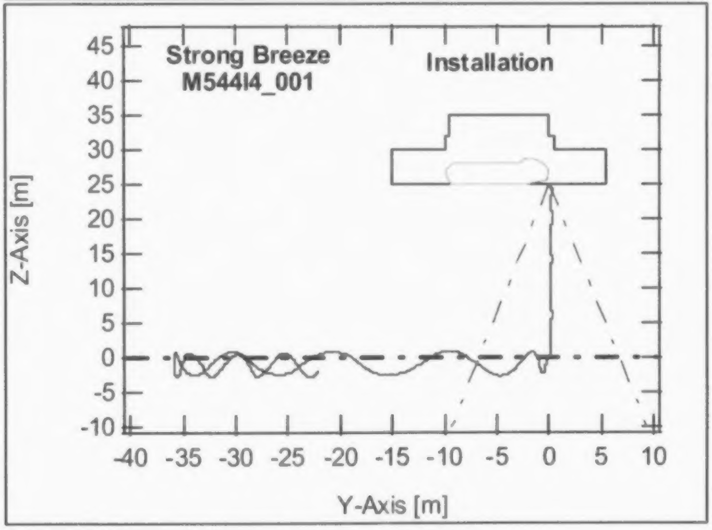
Strong Breeze
M544I4_001
Installation
Z-Axis [m]
Y-Axis [m]
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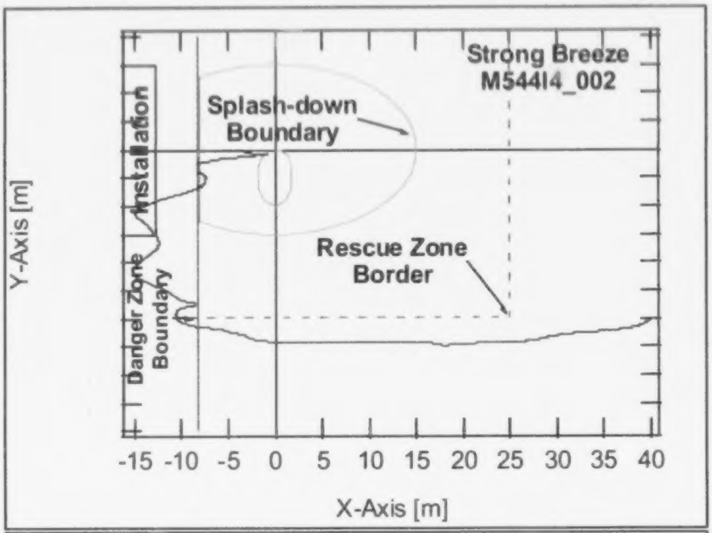
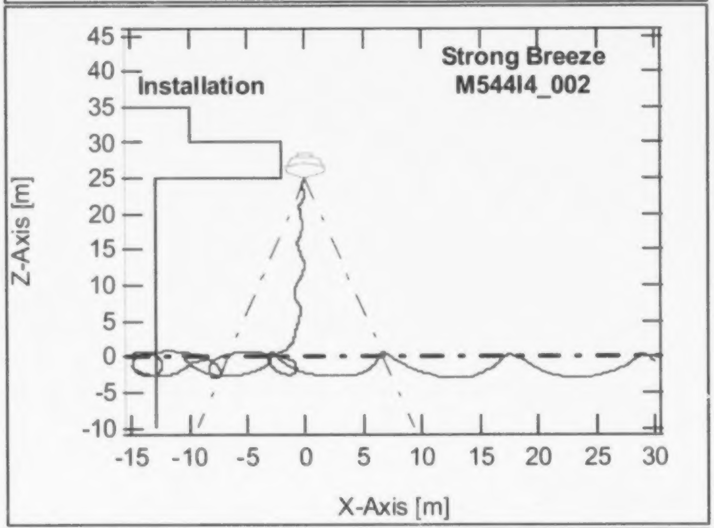

Strong Breeze
M544I4_002
Splash-down
Boundary
Installation
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Strong Breeze
M544I4_002
Installation
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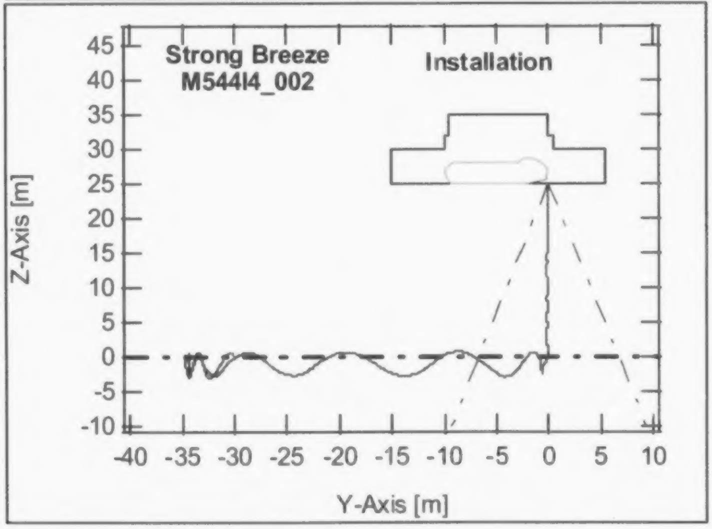
0
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544I4_002
Installation
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-5
-10
Z-Axis [m]
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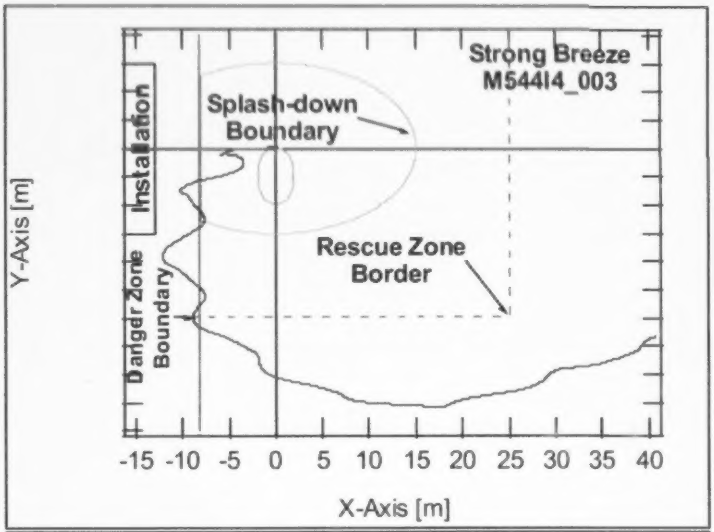
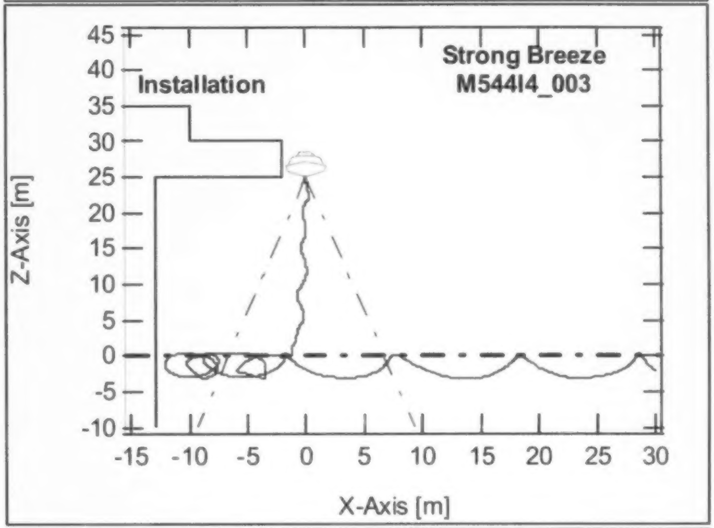
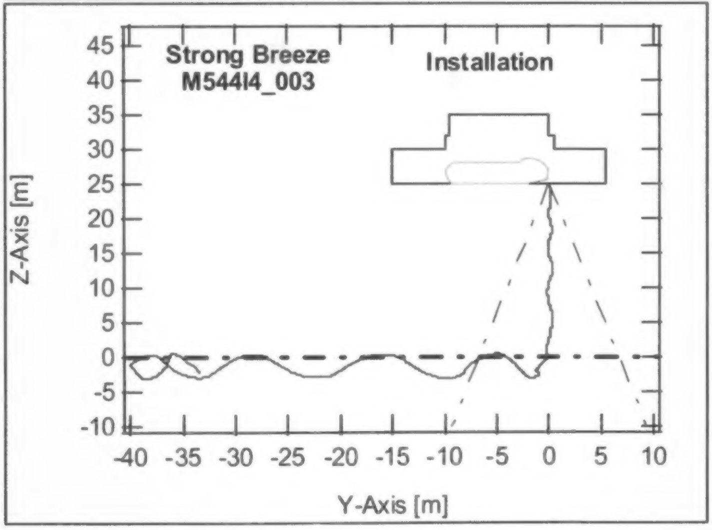
Y-Axis [m]


Strong Breeze
M544I4_003
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Installation
Strong Breeze
M544I4_003
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544I4_003
Installation
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Z-Axis [m]
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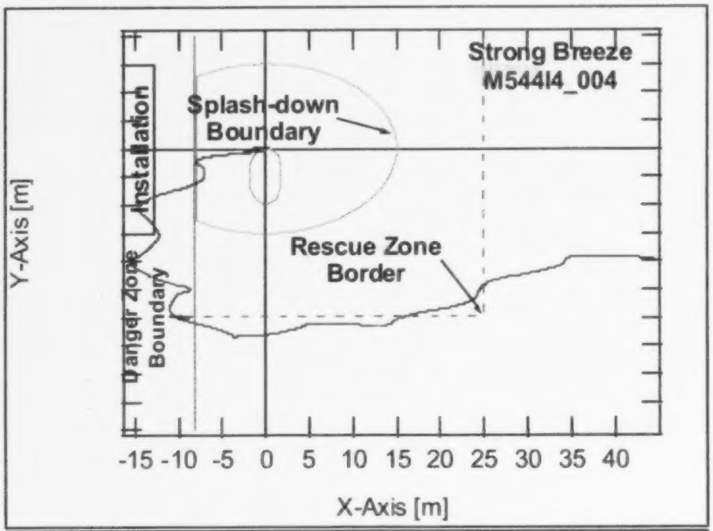
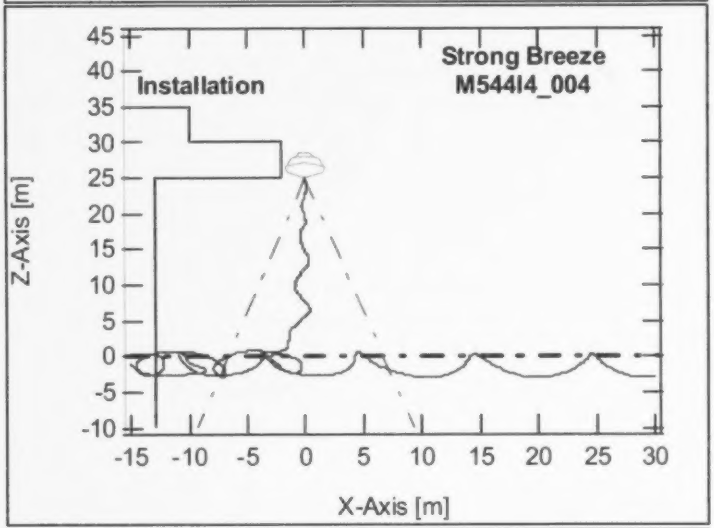
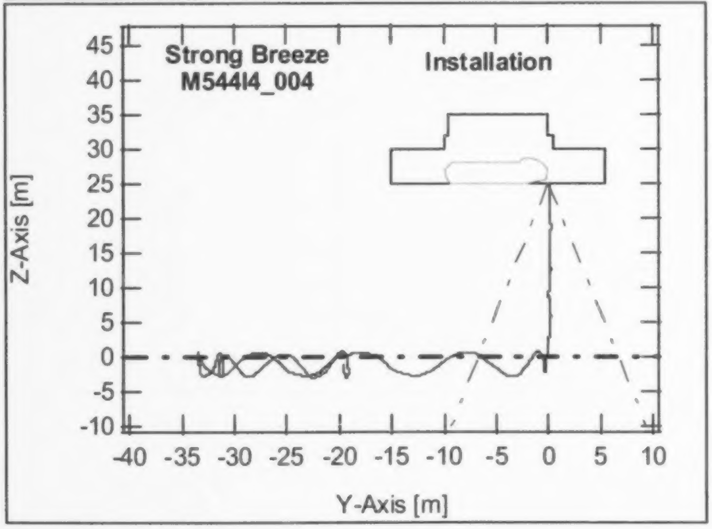
Y-Axis [m]


Strong Breeze
M544I4_004
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Strong Breeze
M544I4_004
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544I4_004
Installation
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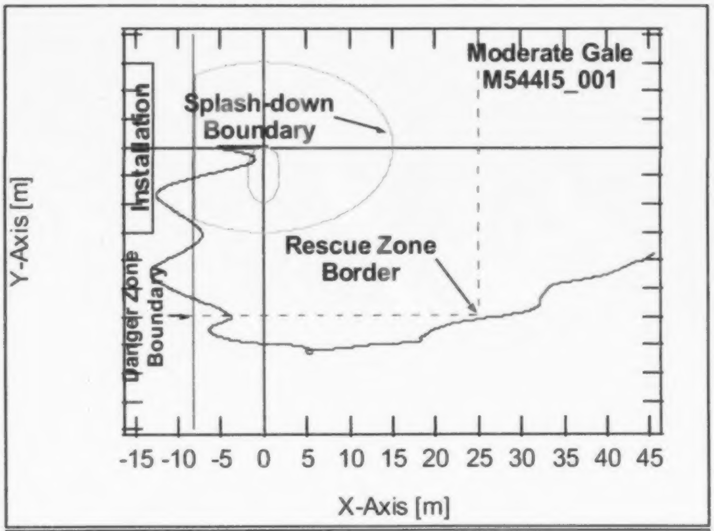
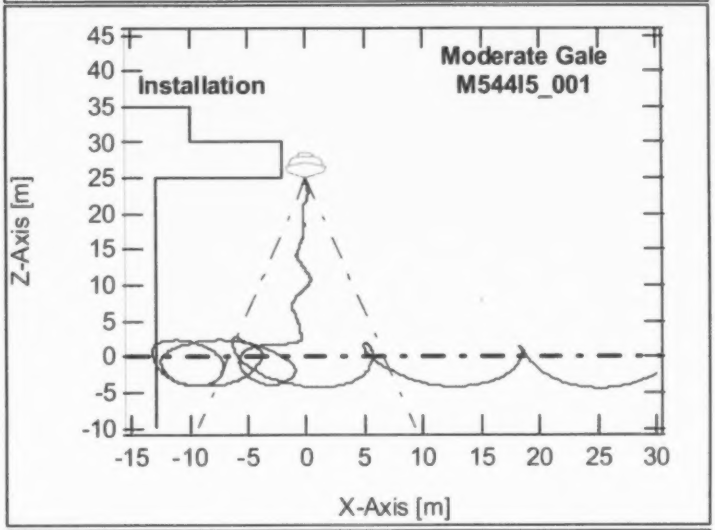
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Gale
M544I5_001
Splash-down Boundary
Installation
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40 45
X-Axis [m]


Moderate Gale
M544I5_001
Installation
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40
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30
25
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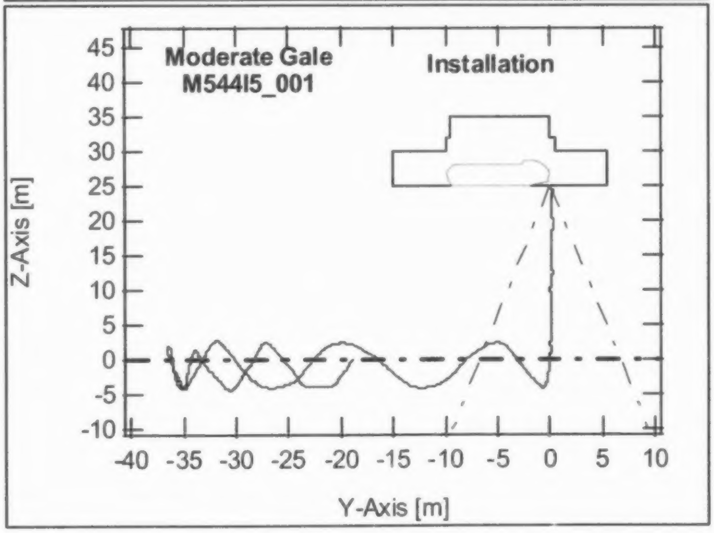
15
10
5
0
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544I5_001
Installation
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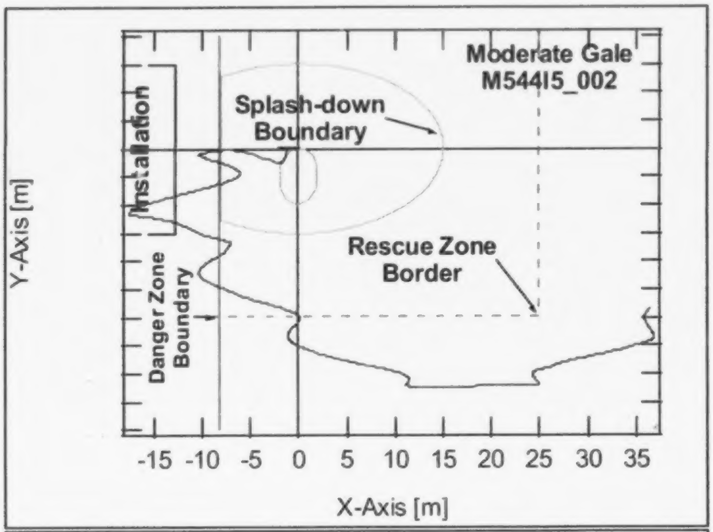
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Gale
M544I5_002
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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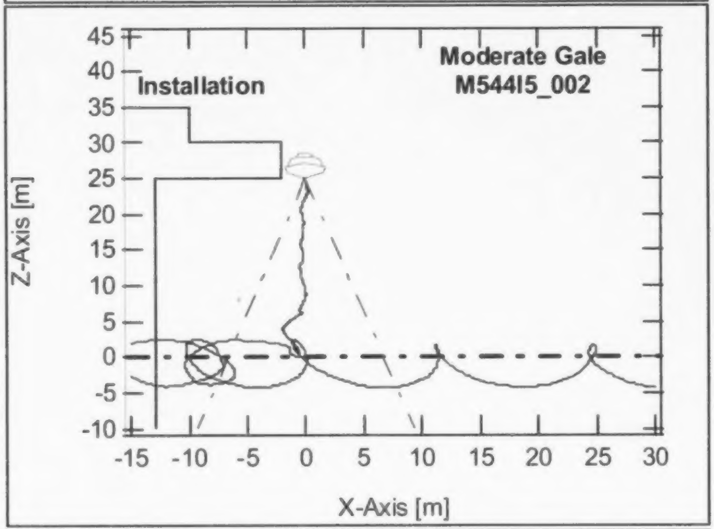
X-Axis [m]


Moderate Gale
M544I5_002
Installation
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-5
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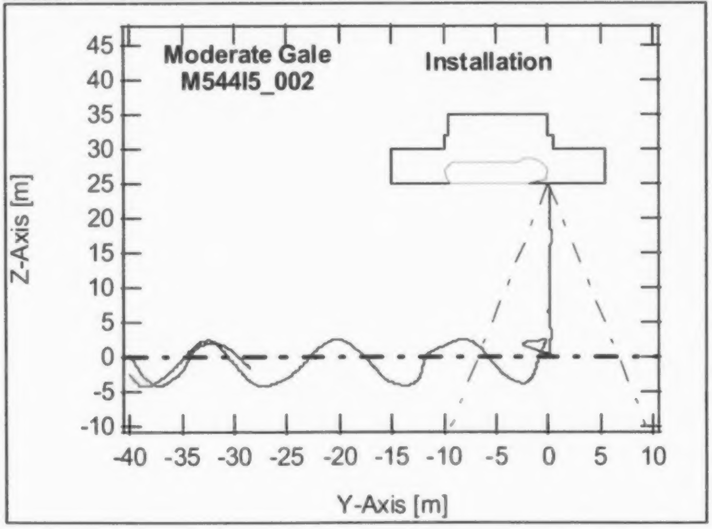
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544I5_002
Installation
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Z-Axis [m]
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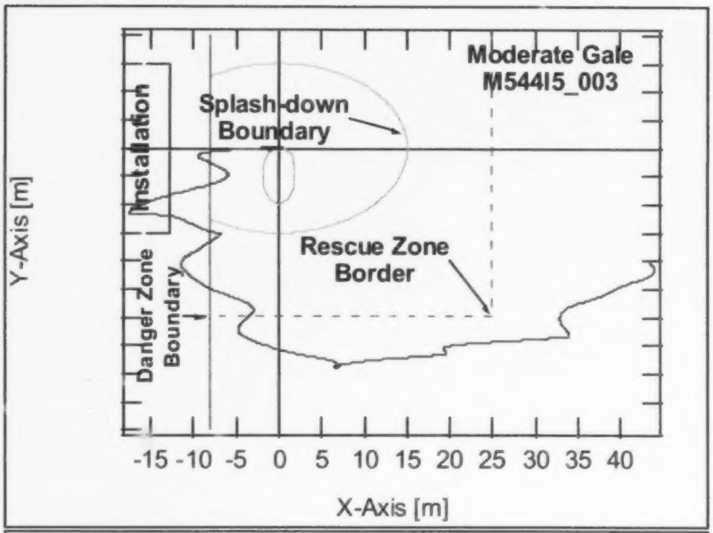
Y-Axis [m]


Moderate Gale
M544I5_003
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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-5
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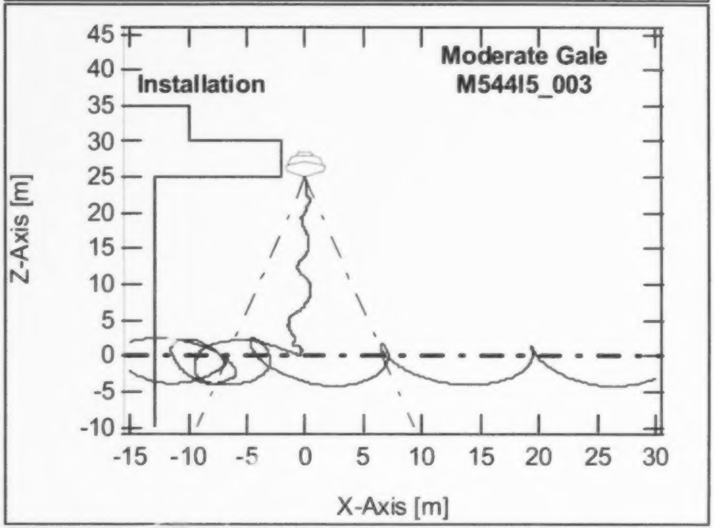
40
X-Axis [m]


Installation
Moderate Gale
M544I5_003
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-5
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Z-Axis [m]
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-5
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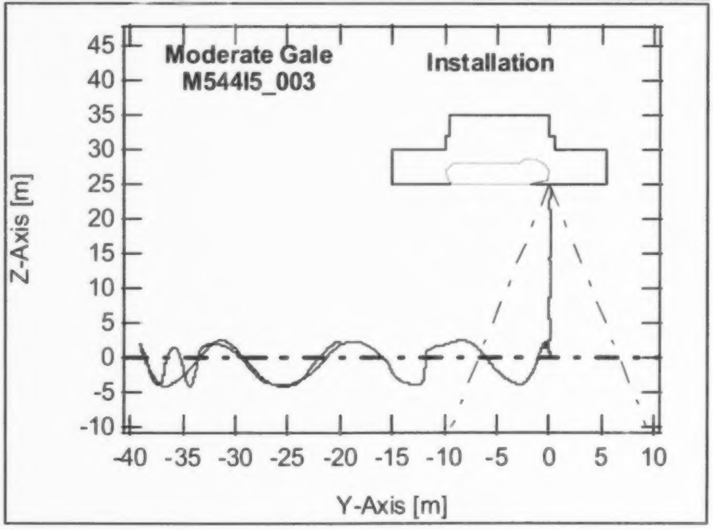
X-Axis [m]


Moderate Gale
M544I5_003
Installation
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0
-5
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Z-Axis [m]
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-35
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0
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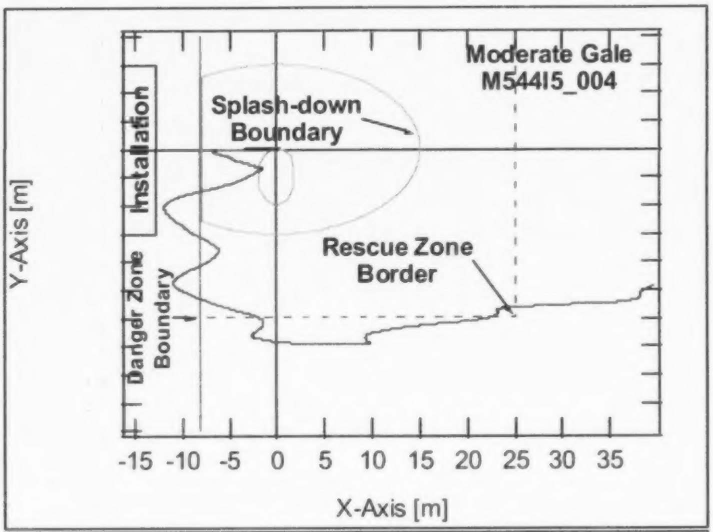
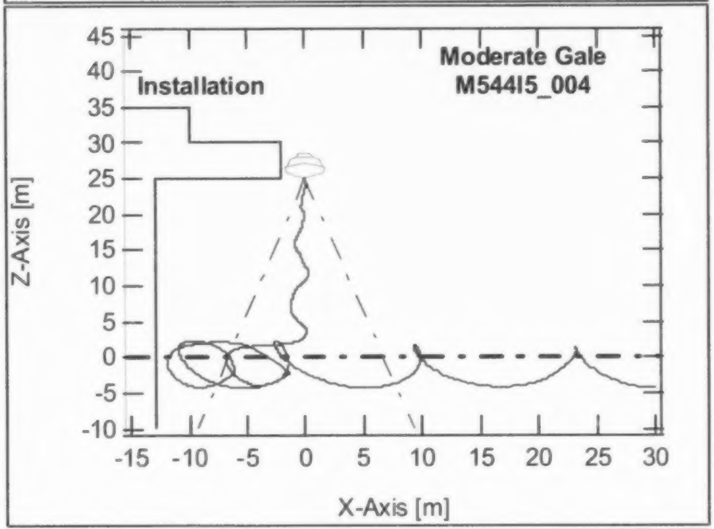
10
Y-Axis [m]


Moderate Gale
M544I5_004
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35
X-Axis [m]


Moderate Gale
M544I5_004
Installation
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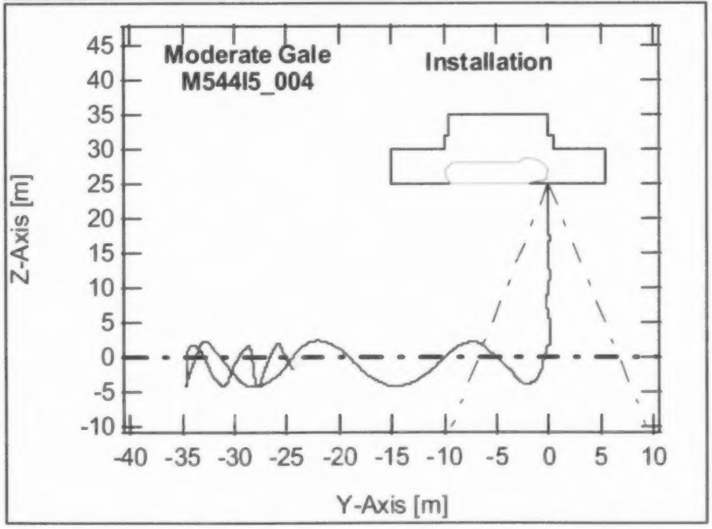
0
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544I5_004
Installation
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30
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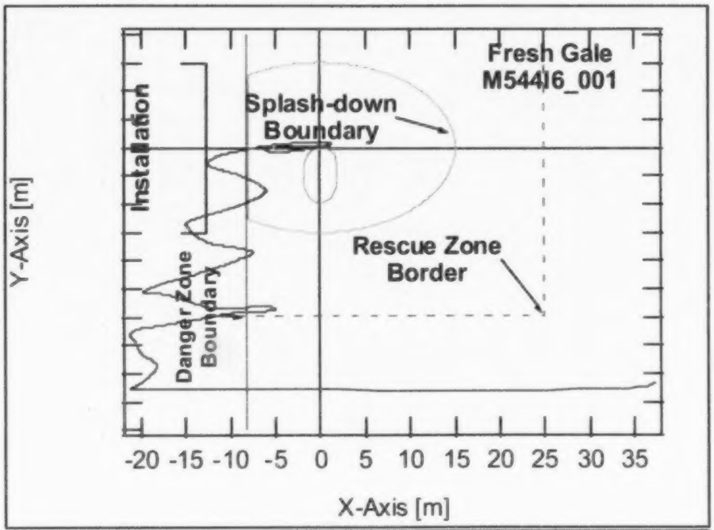
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Gale
M544I6_001
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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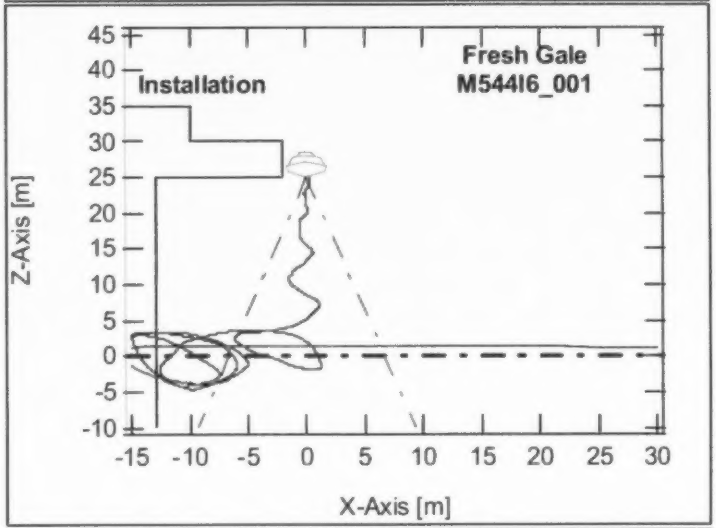
X-Axis [m]


Fresh Gale
M544I6_001
Installation
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Z-Axis [m]
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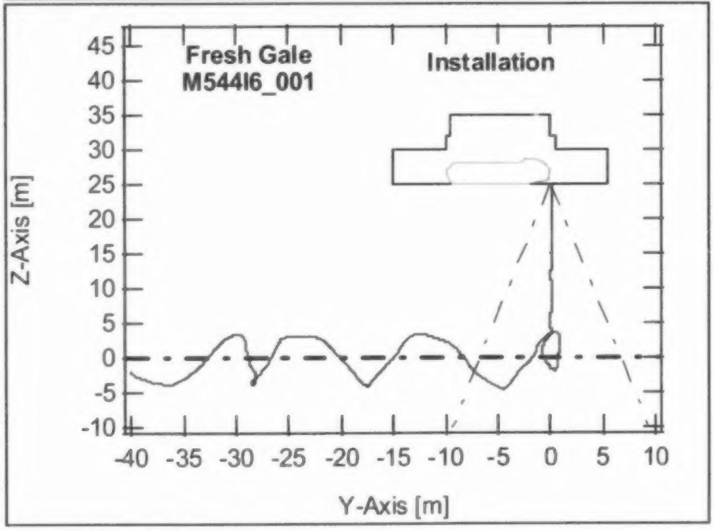
X-Axis [m]


Fresh Gale
M544I6_001
Installation
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Z-Axis [m]
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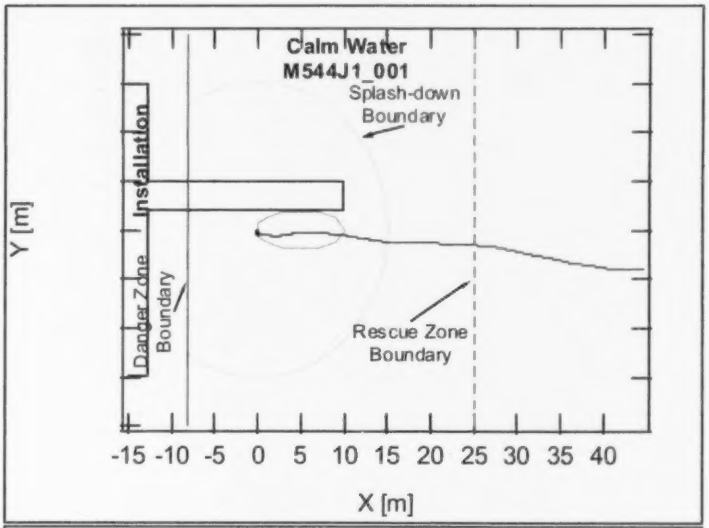
Y-Axis [m]


Calm Water
M544J1_001
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15
-10
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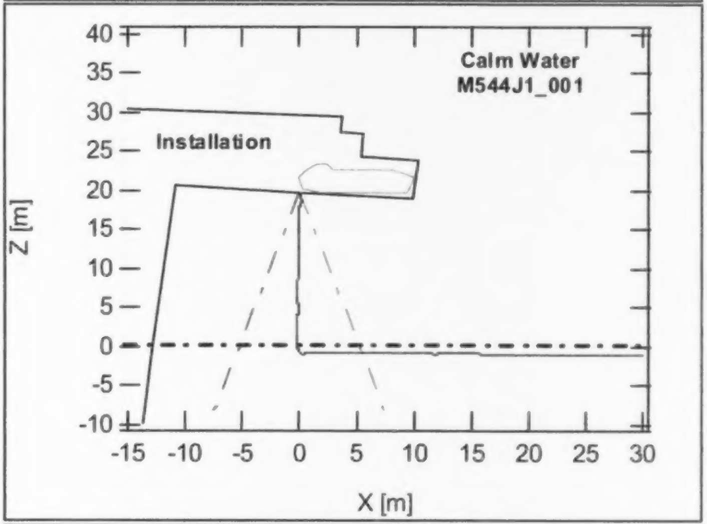
20
25
30
35
40
X [m]


Calm Water
M544J1_001
Installation
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25
20
15
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-10
Z [m]
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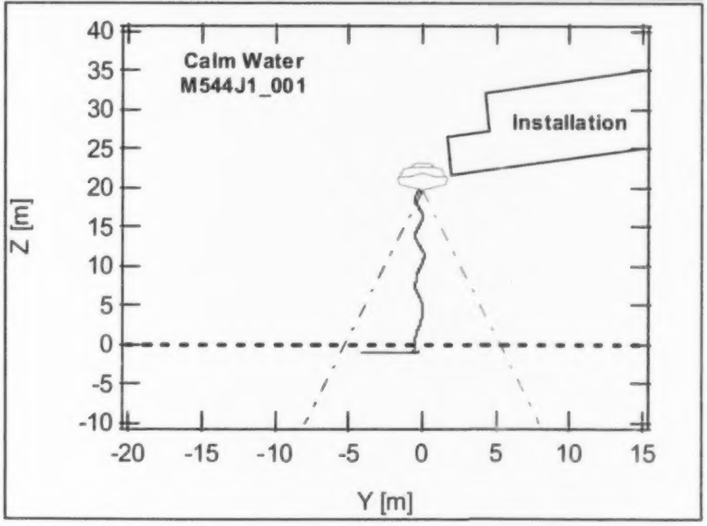
20
25
30
X [m]


Calm Water
M544J1_001
Installation
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Z [m]
-20
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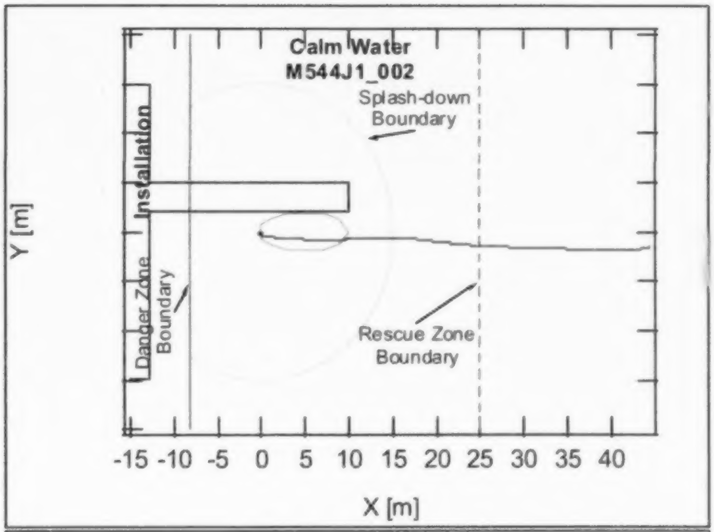
Y [m]


Calm Water
M544J1_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
X [m]
-15
-10
-5
0
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25
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35
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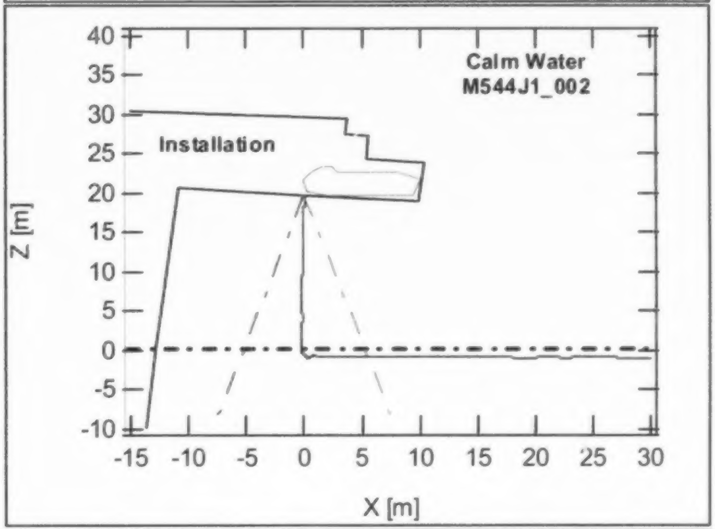
Calm Water
M544J1_002
Installation
Z [m]
X [m]
40
35
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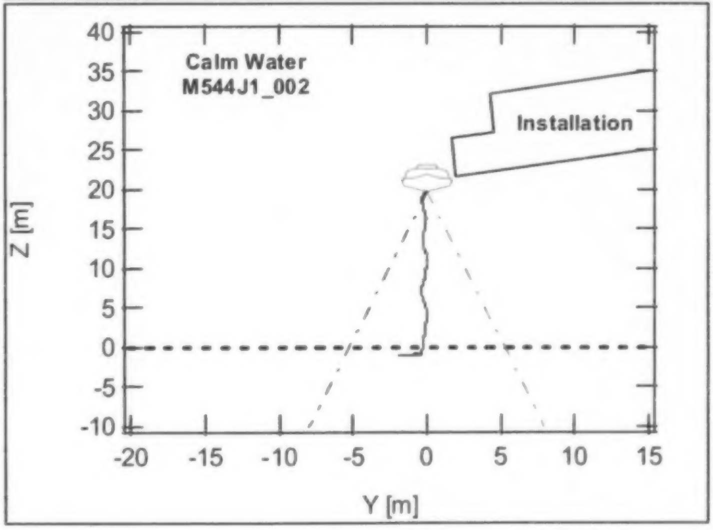
Calm Water
M544J1_002
Installation
Z [m]
Y [m]
40
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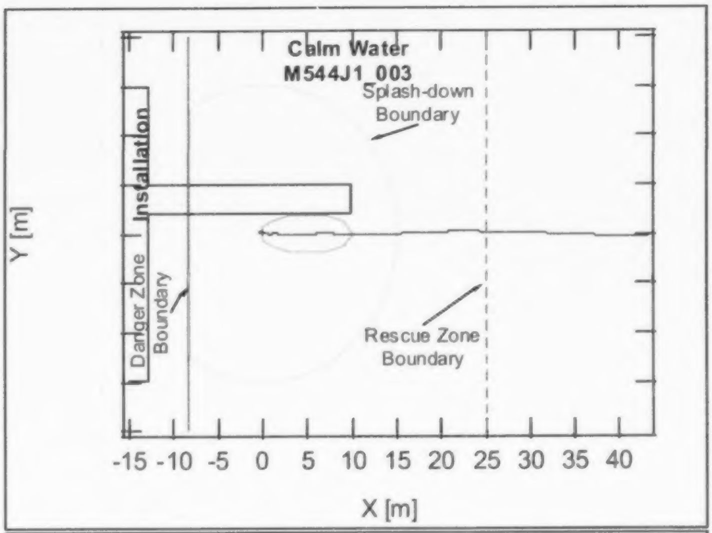
Calm Water
M544J1_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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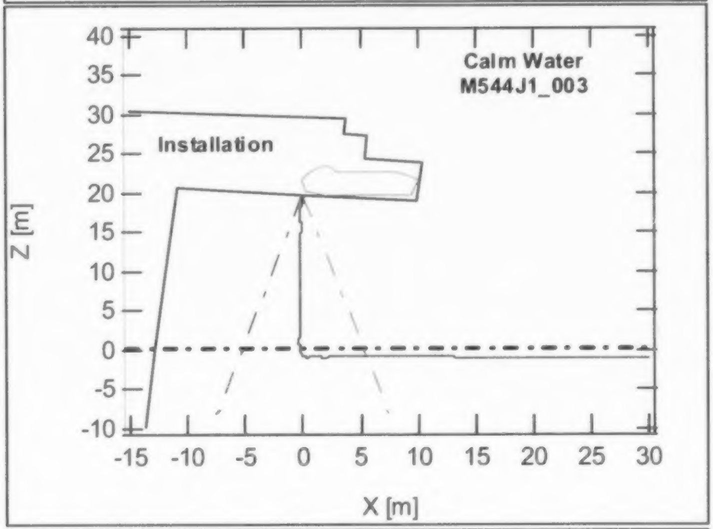
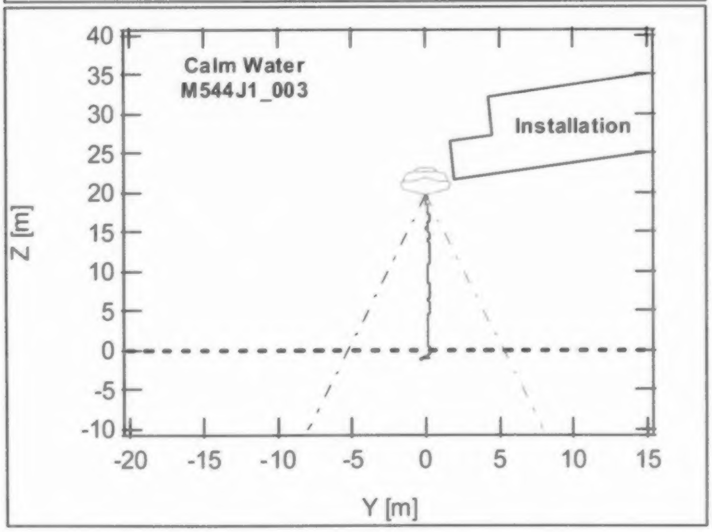
X [m]


Calm Water
M544J1_003
Installation
Z [m]
40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Calm Water
M544J1_003
Installation
Z [m]
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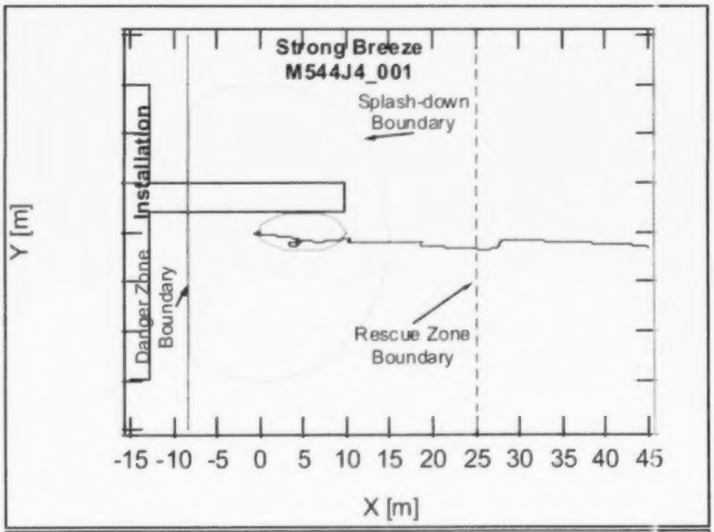
-20 -15 -10 -5 0 5 10 15
Y [m]


Strong Breeze
M544J4_001
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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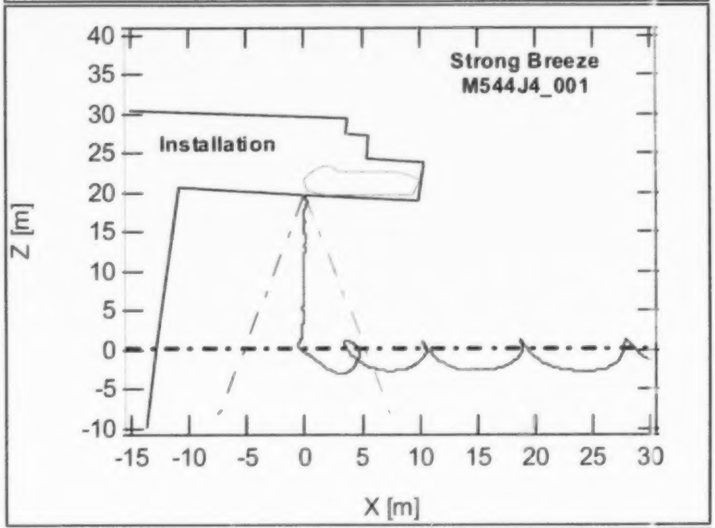
45
X [m]


Strong Breeze
M544J4_001
Installation
Z [m]
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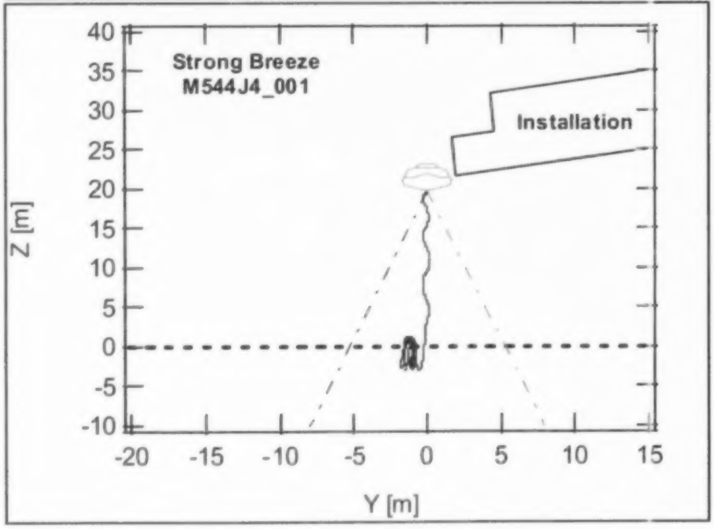
30
X [m]


Strong Breeze
M544J4_001
Installation
Z [m]
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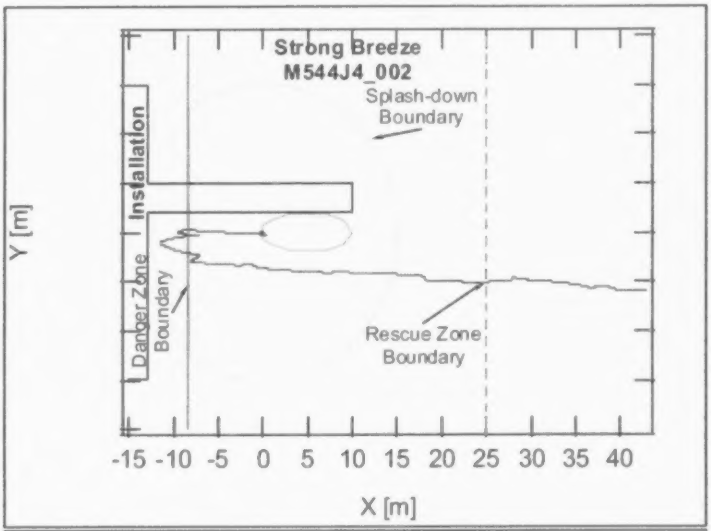
Strong Breeze
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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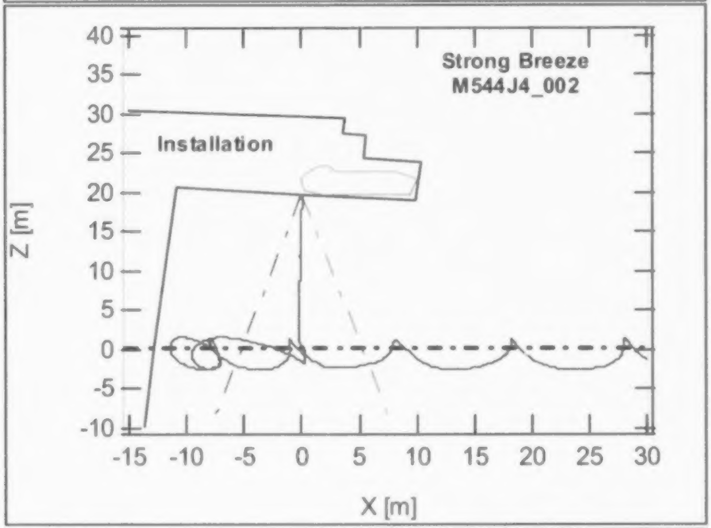
X [m]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Installation
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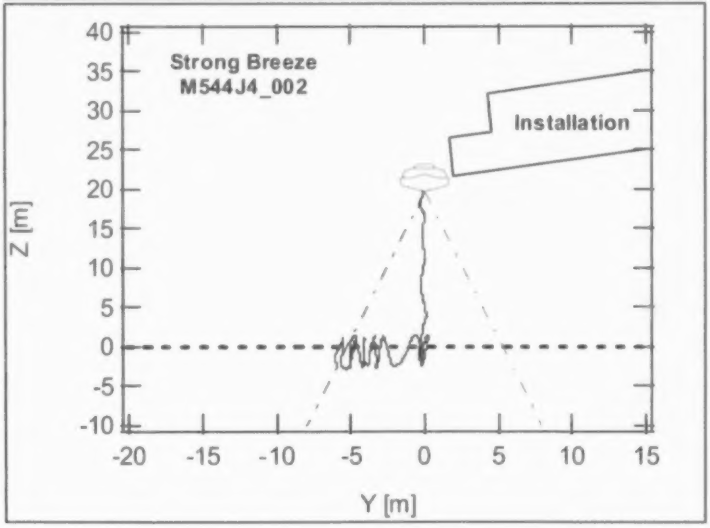
X [m]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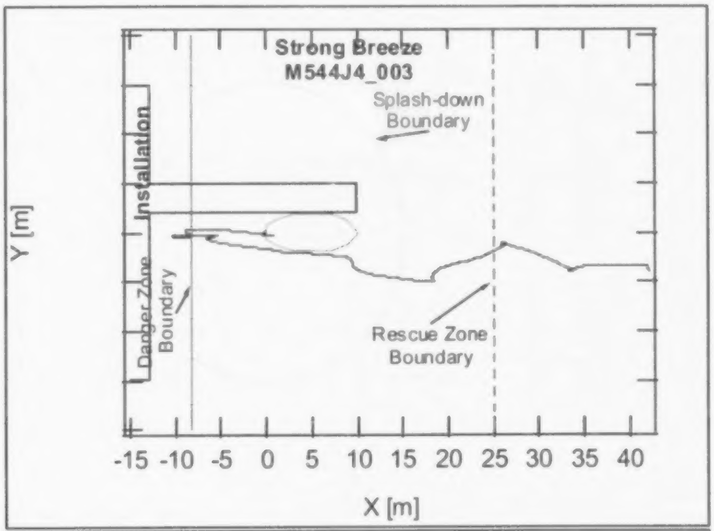
Y [m]


Strong Breeze
M544J4_003
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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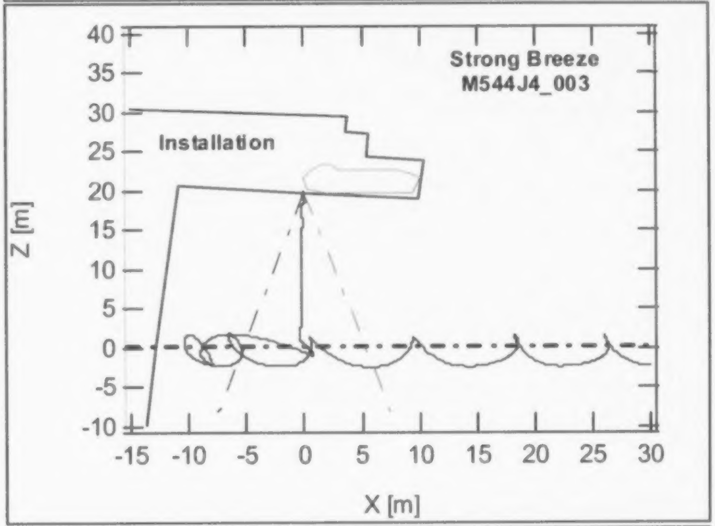
X [m]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M544J4_003
Installation
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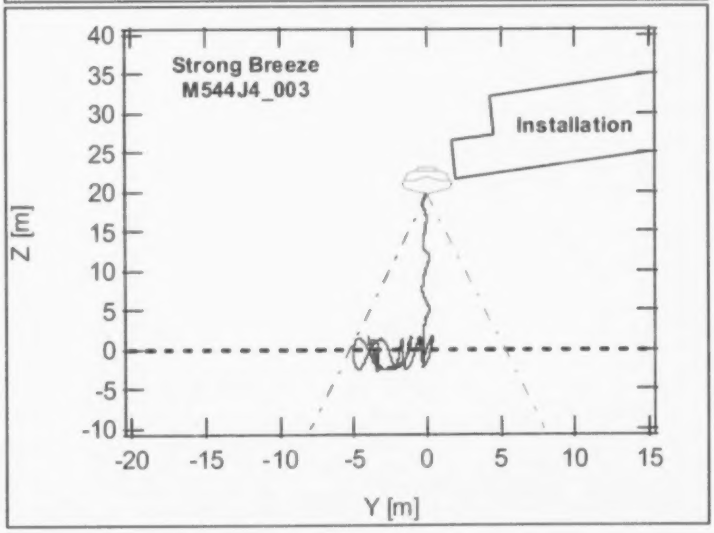
X [m]


Strong Breeze
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Installation
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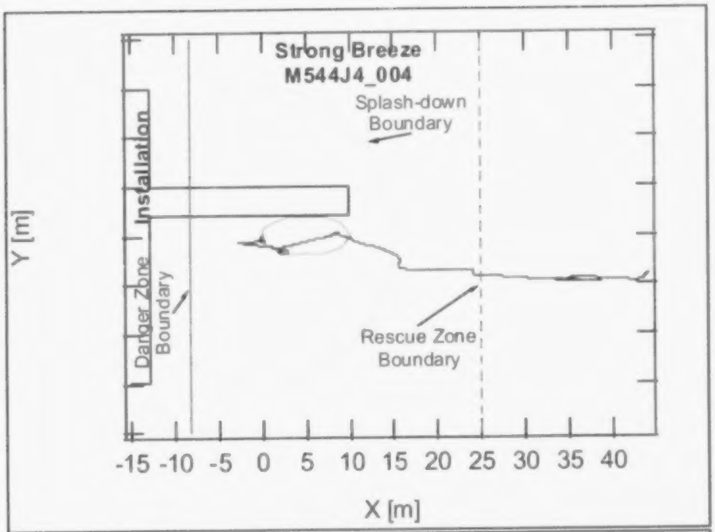
Y [m]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M544J4_004
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Danger Zone
Boundary
Rescue Zone
Boundary
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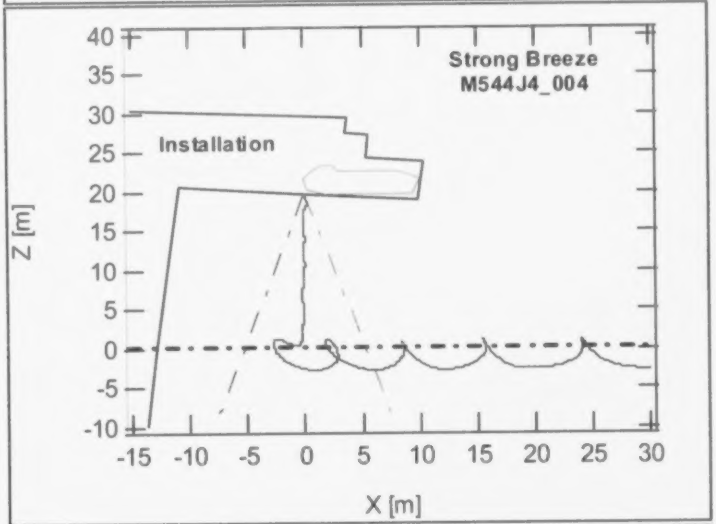
X [m]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Installation
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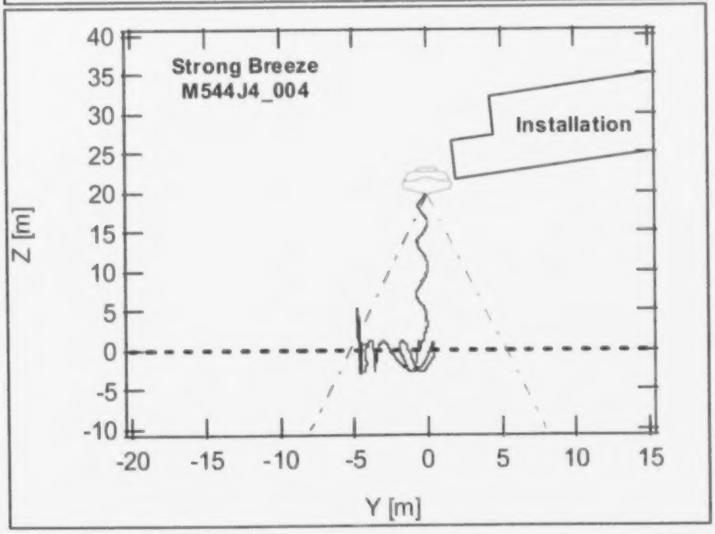
X [m]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Installation
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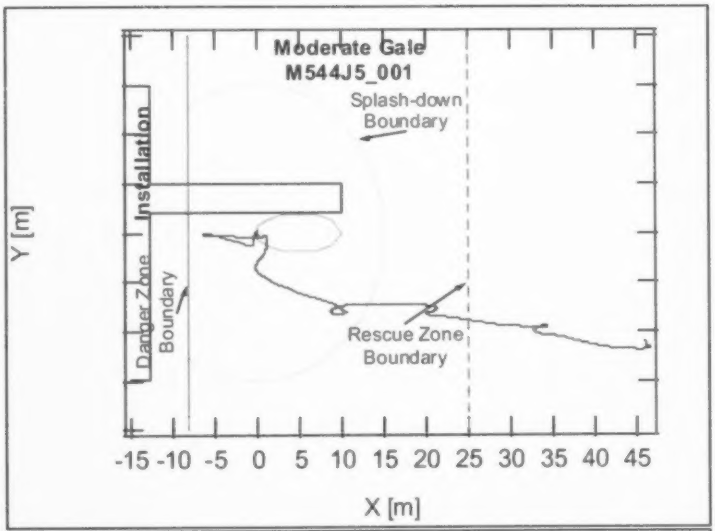
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M544J5_001
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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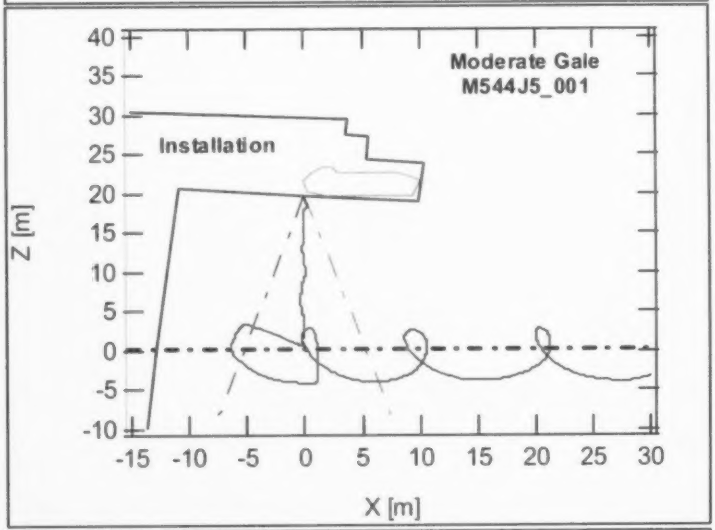
X [m]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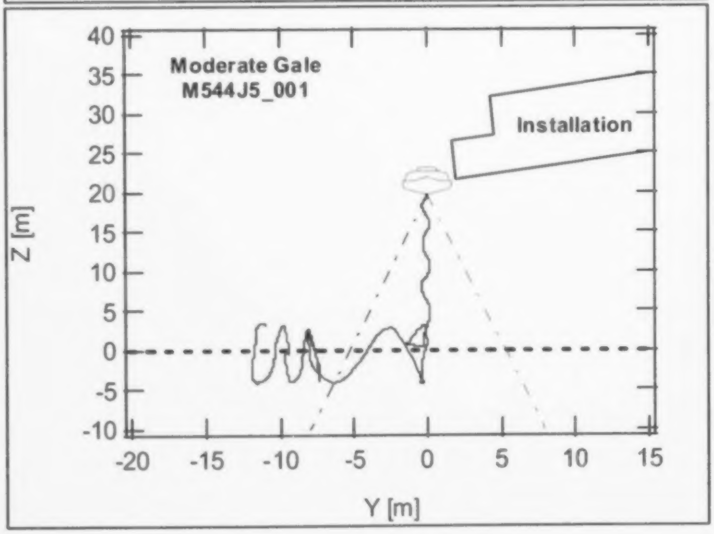
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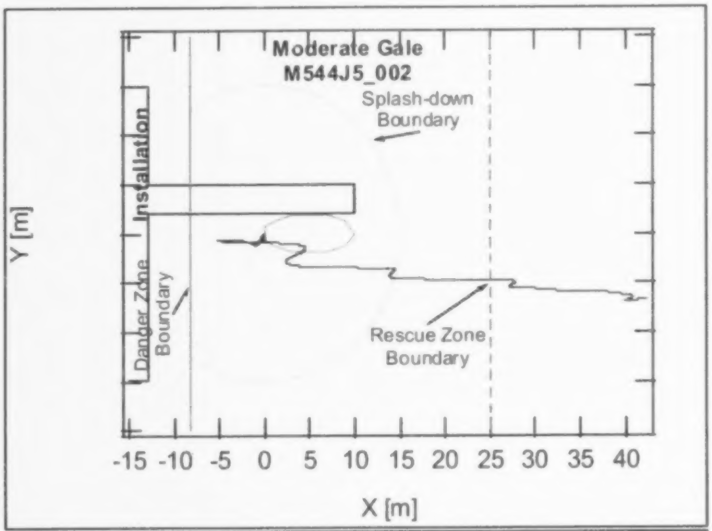
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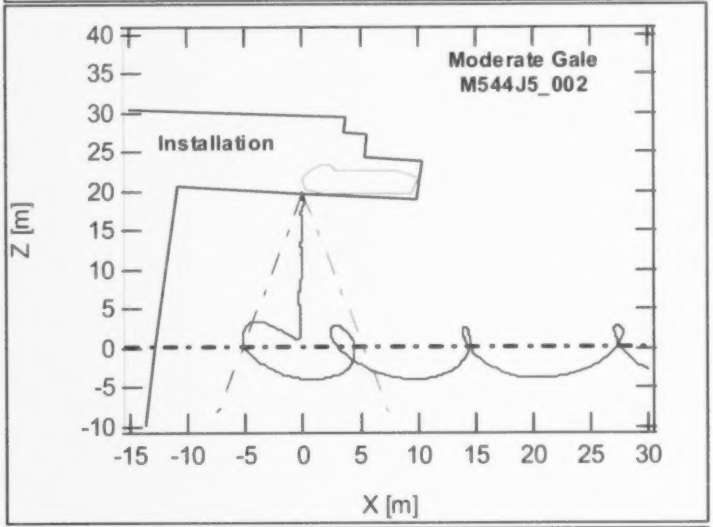
Splash-down
Boundary
Installation
Y [m]
Danger Zone
Boundary
Rescue Zone
Boundary
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]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Installation
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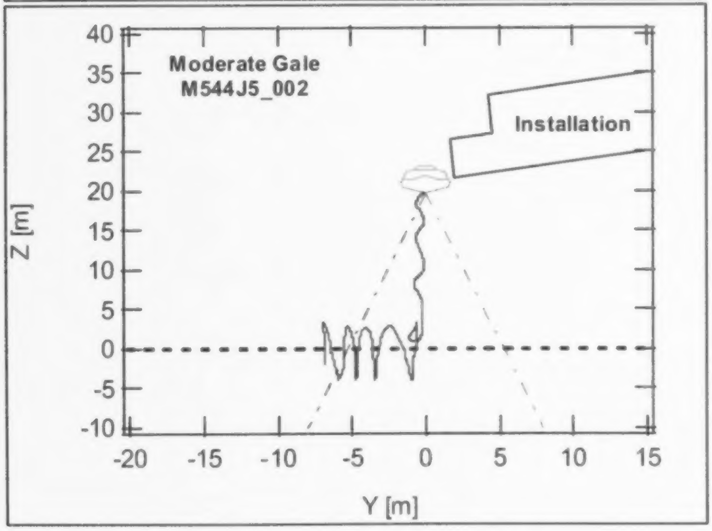
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Installation
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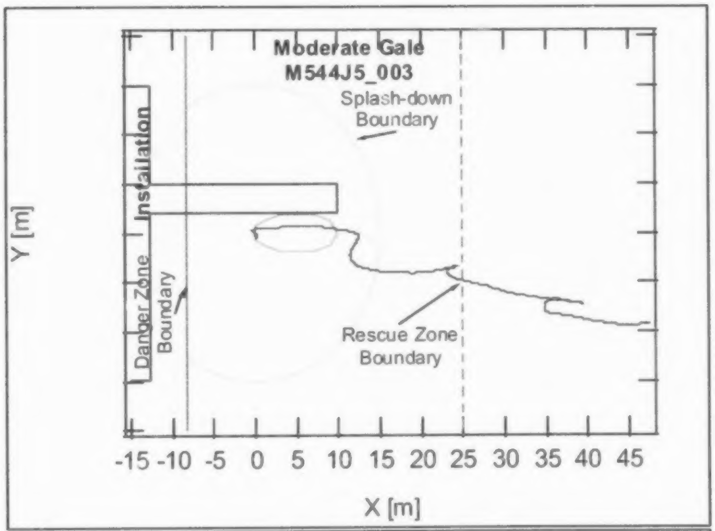
Y [m]


Moderate Gale
M544J5_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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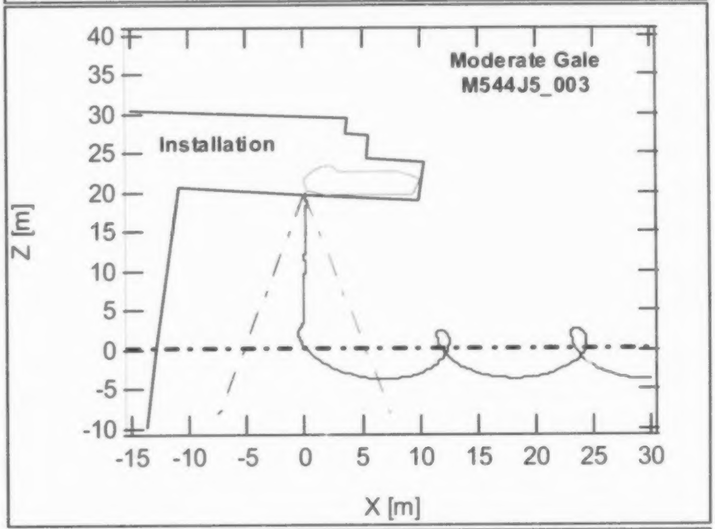
X [m]


Moderate Gale
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Installation
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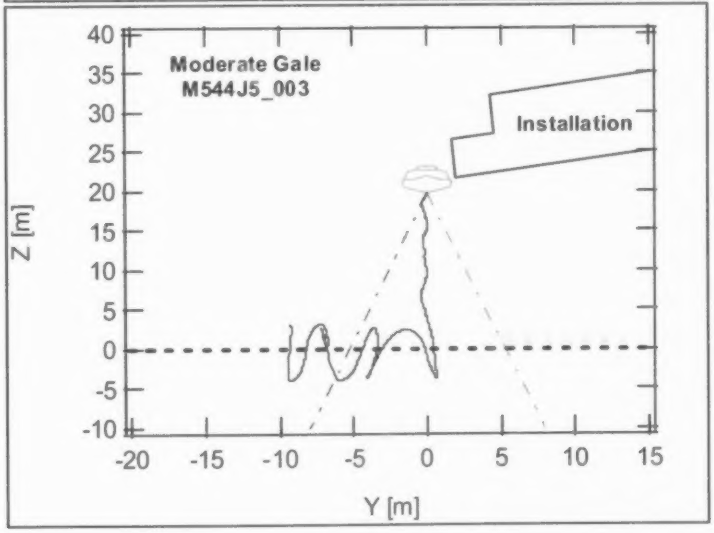
X [m]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Installation
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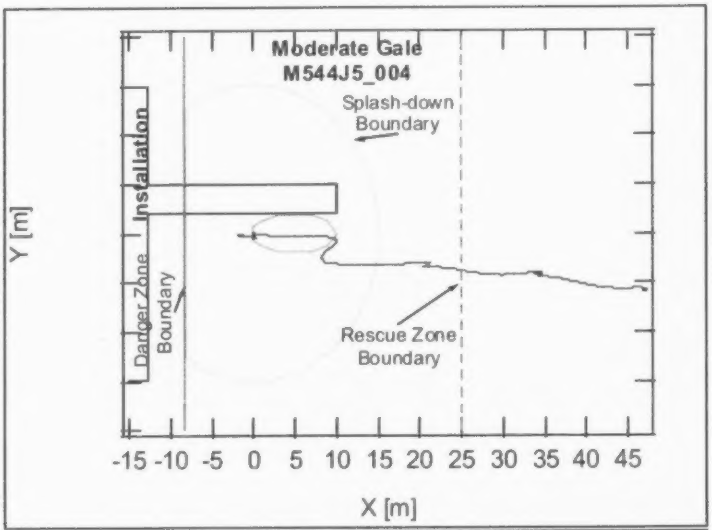
Y [m]


Moderate Gale
M544J5_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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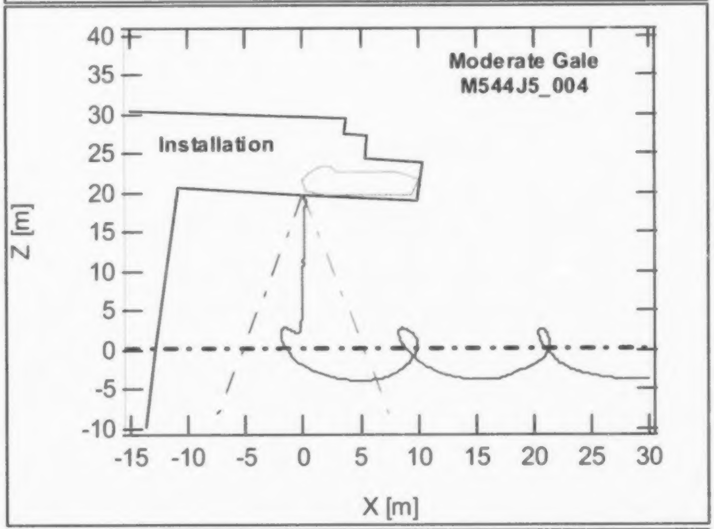
Moderate Gale
M544J5_004
Installation
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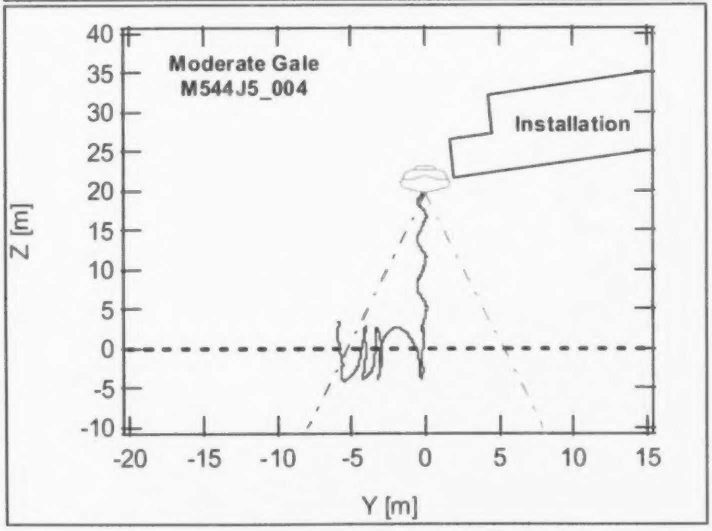
Moderate Gale
M544J5_004
Installation
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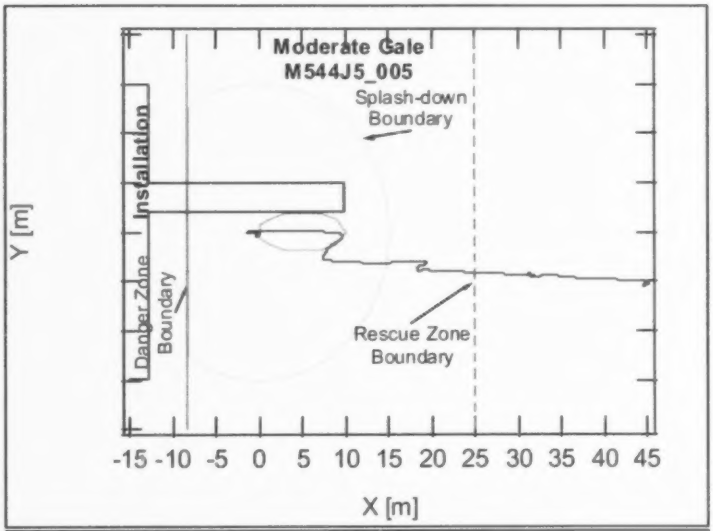
Y [m]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M544J5_005
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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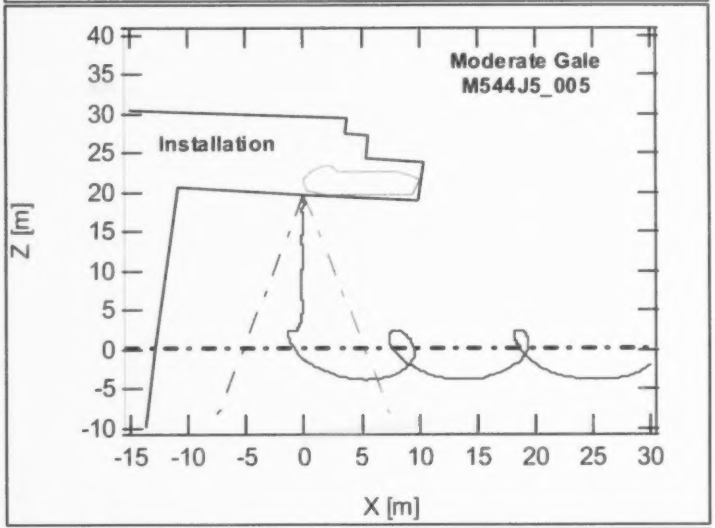
X [m]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Installation
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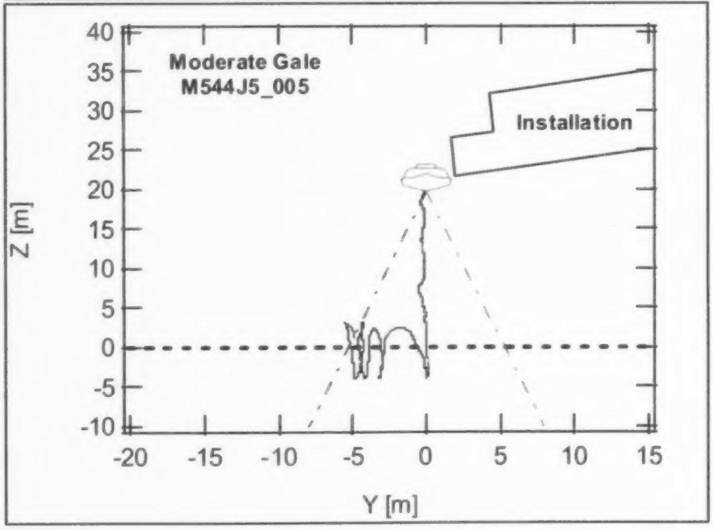
X [m]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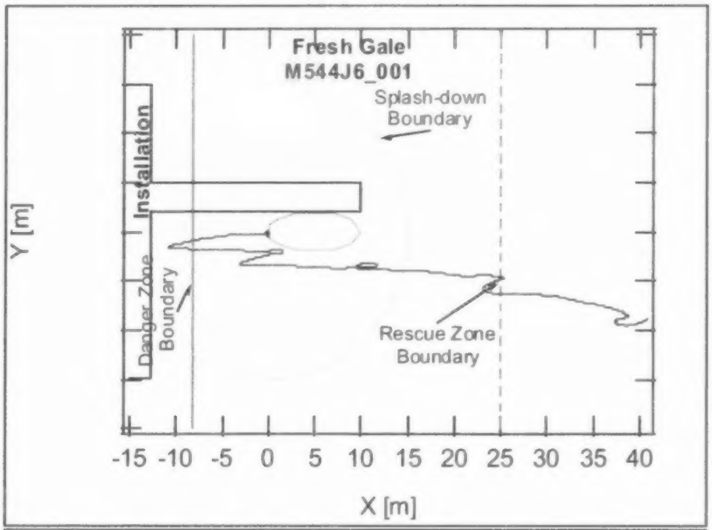
Fresh Gale
M544J6_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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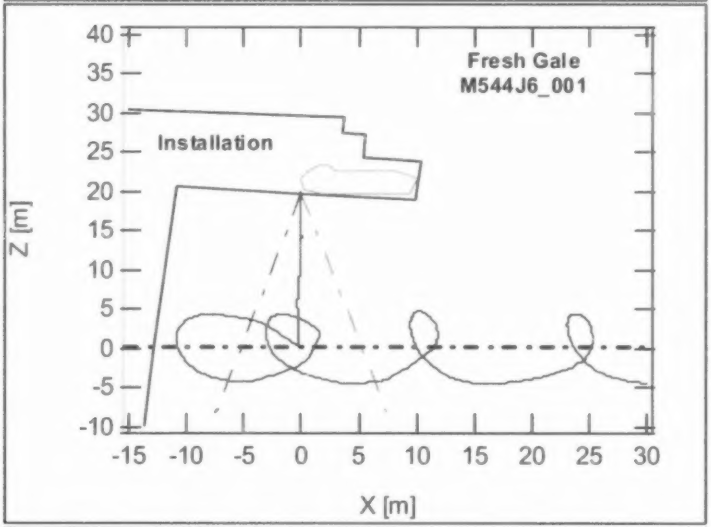
X [m]


Fresh Gale
M544J6_001
Installation
Z [m]
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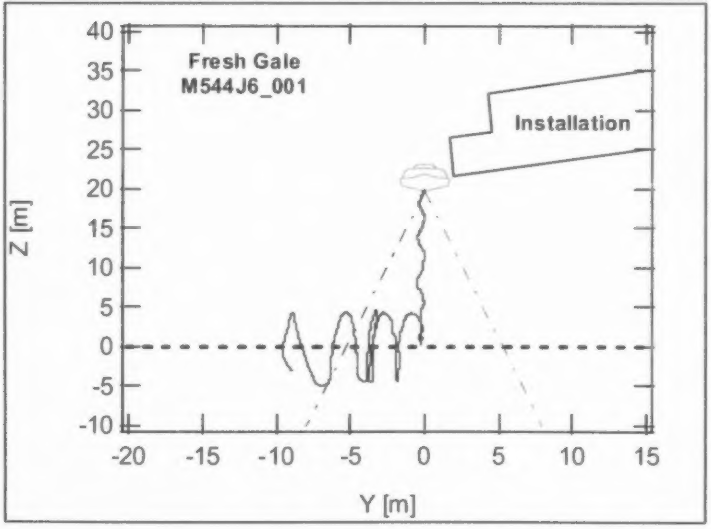
X [m]


Fresh Gale
M544J6_001
Installation
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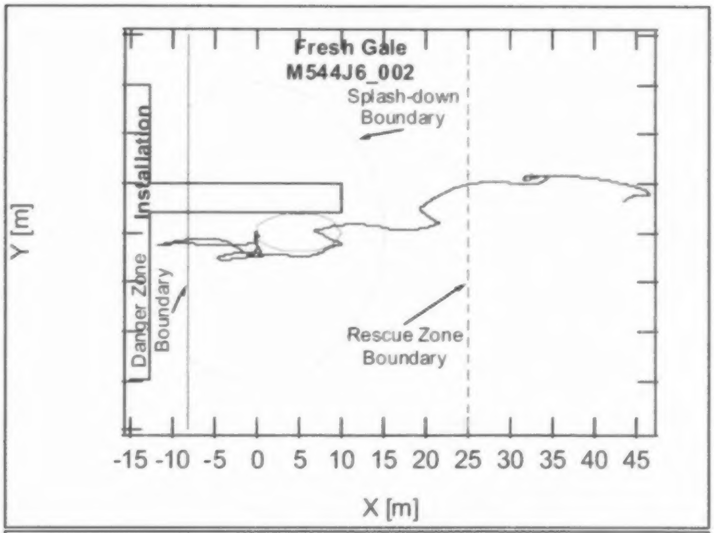
Y [m]


Fresh Gale
M544J6_002
Splash-down
Boundary
Installation
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Danger Zone
Boundary
Rescue Zone
Boundary
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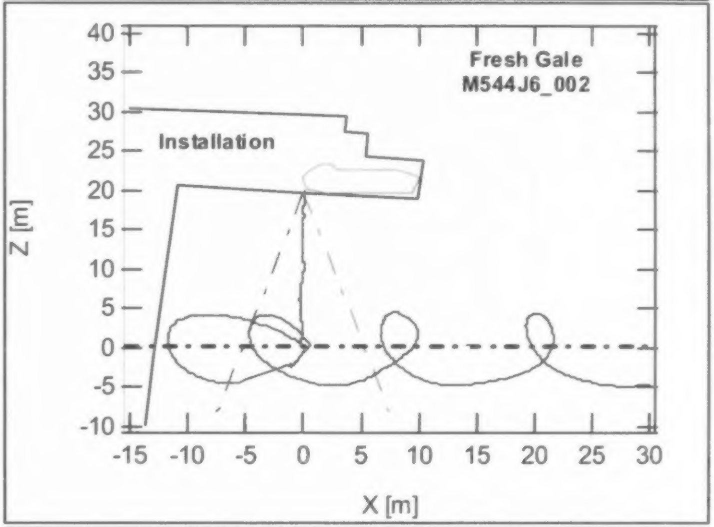
X [m]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Installation
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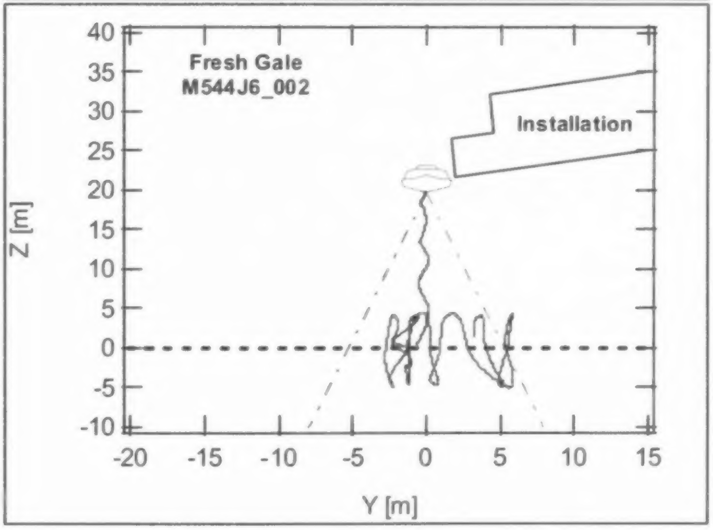
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Installation
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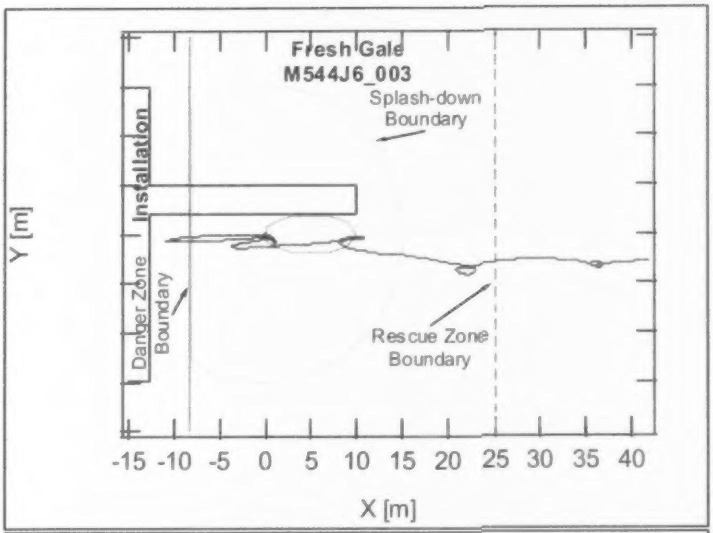
Y [m]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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
X [m]
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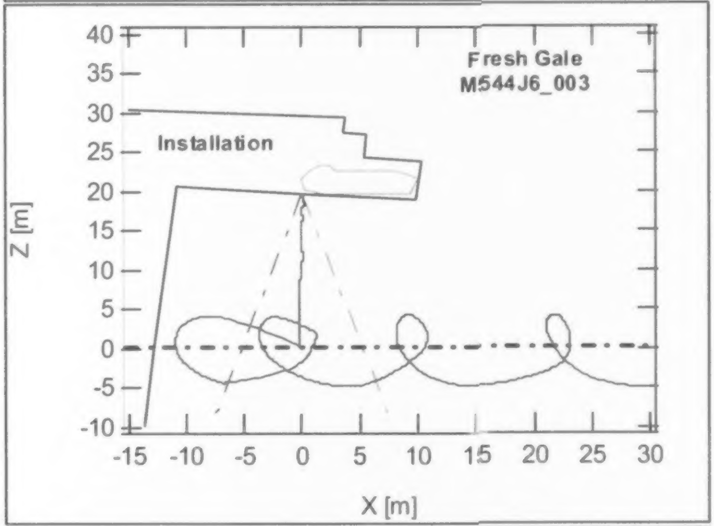
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Installation
Z [m]
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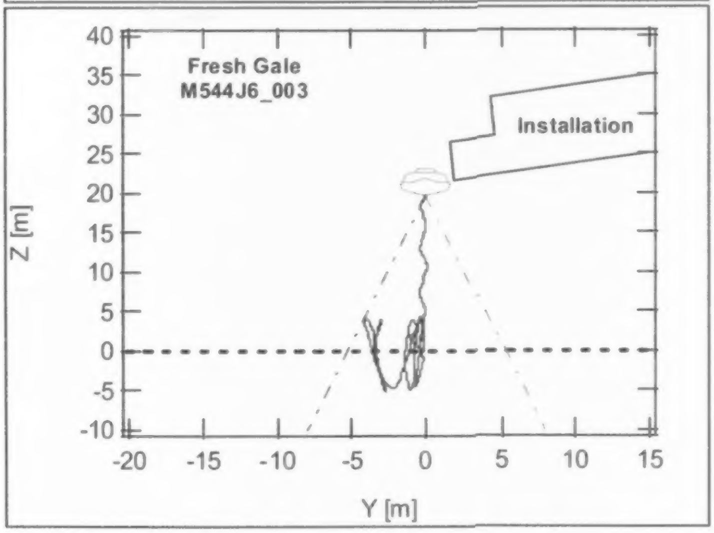
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Installation
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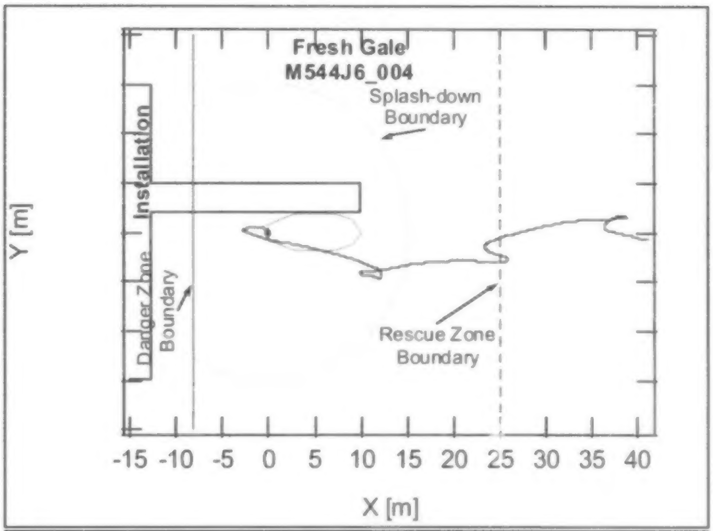
Fresh Gale
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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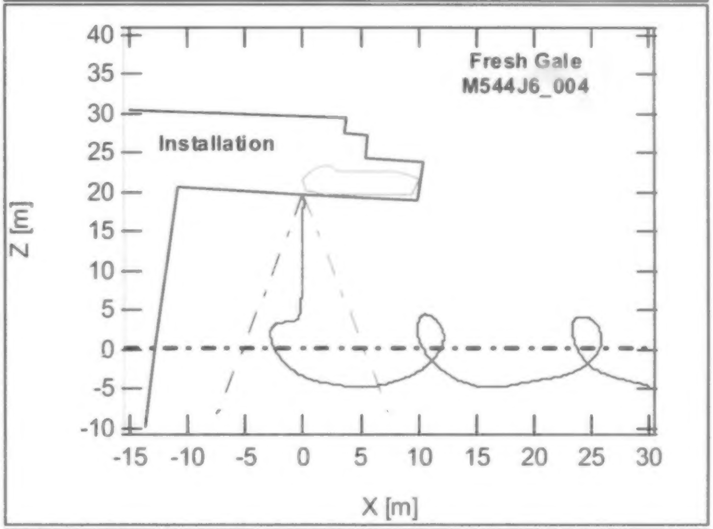
X [m]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Installation
Z [m]
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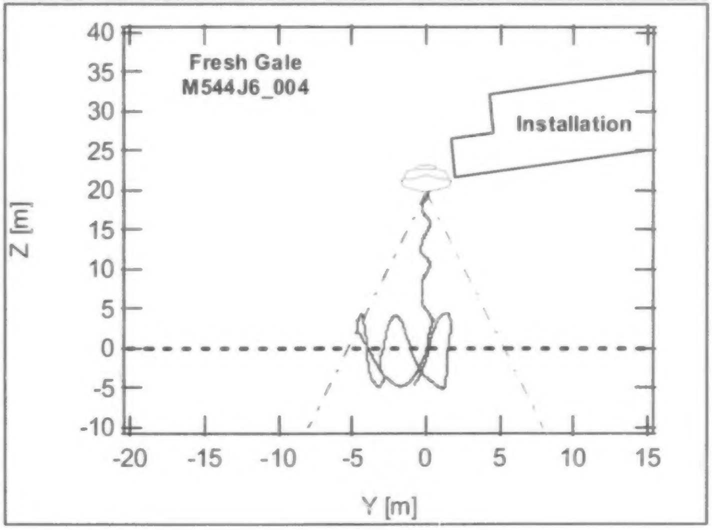
X [m]


Fresh Gale
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Installation
Z [m]
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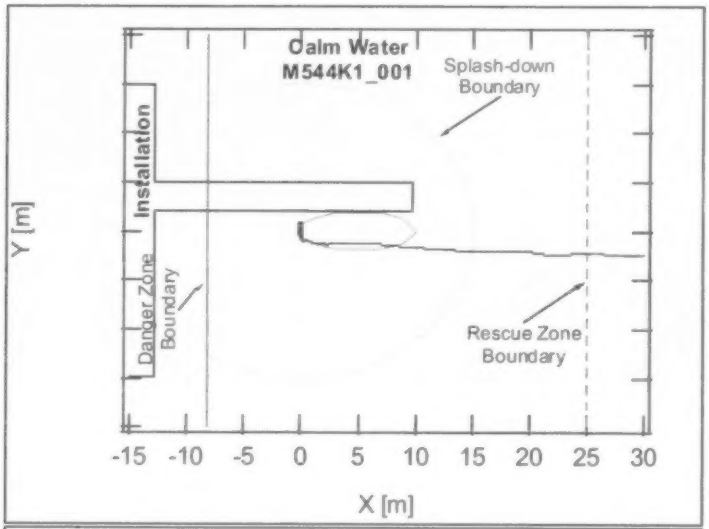
Y [m]


Calm Water
M544K1_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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X [m]
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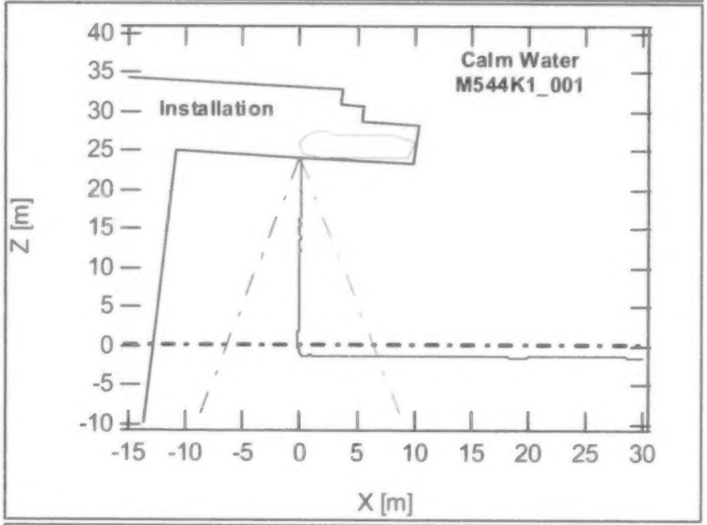
Calm Water
M544K1_001
Installation
Z [m]
X [m]
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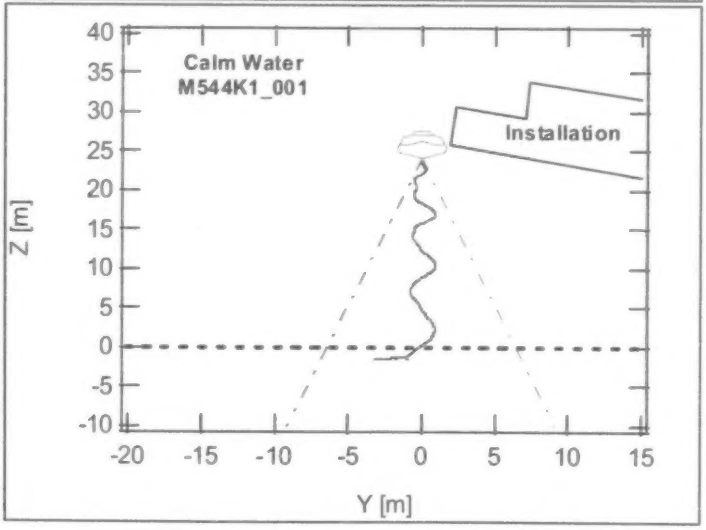
Calm Water
M544K1_001
Installation
Z [m]
Y [m]
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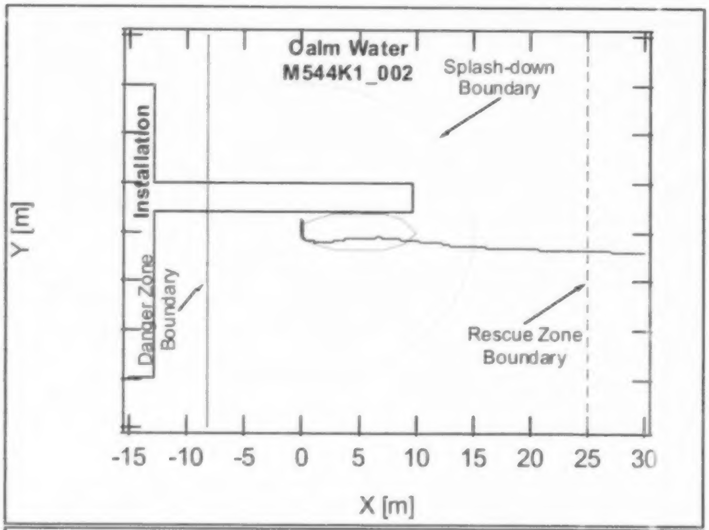
Calm Water
M544K1_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
X [m]
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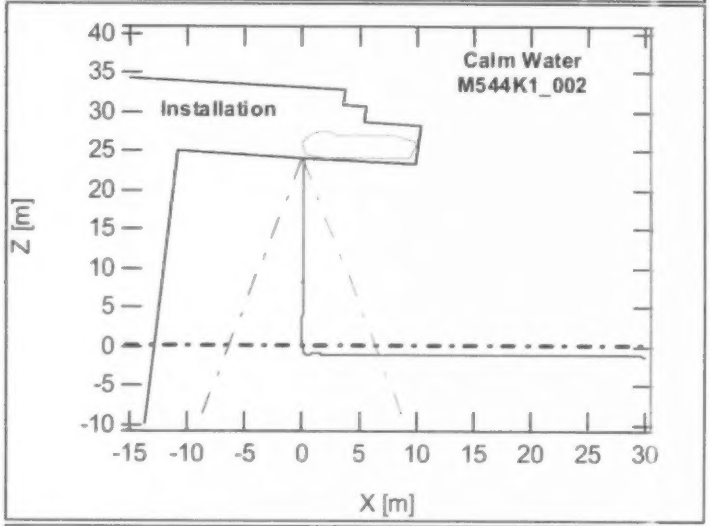
Calm Water
M544K1_002
Installation
Z [m]
X [m]
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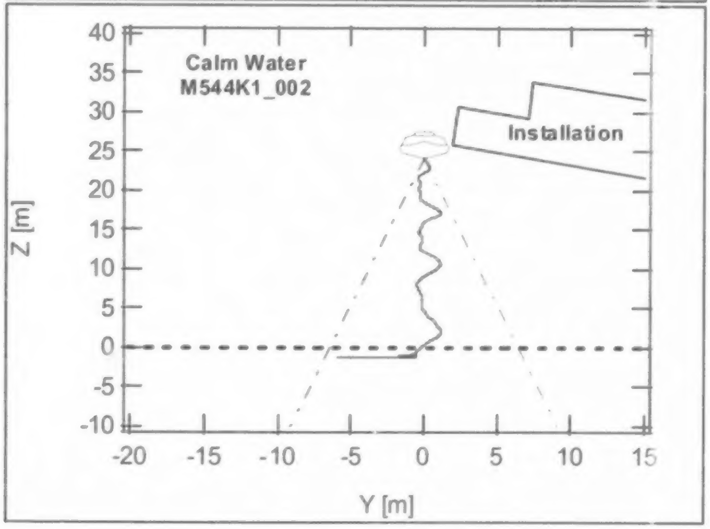
Calm Water
M544K1_002
Installation
Z [m]
Y [m]
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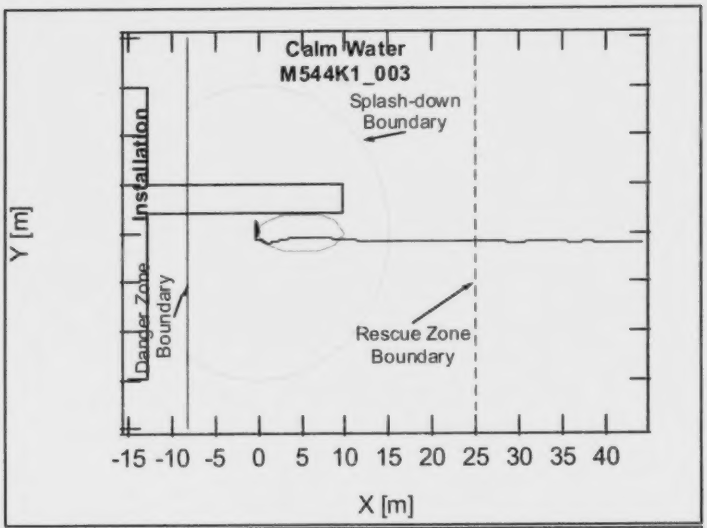
Calm Water
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Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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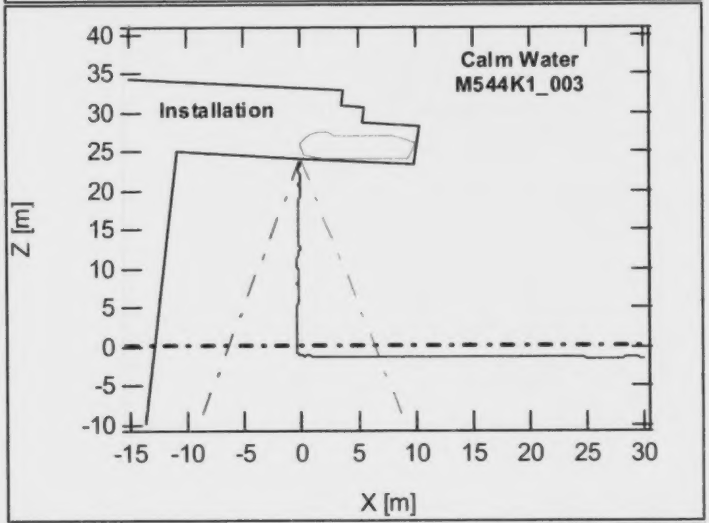
X [m]


Calm Water
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Installation
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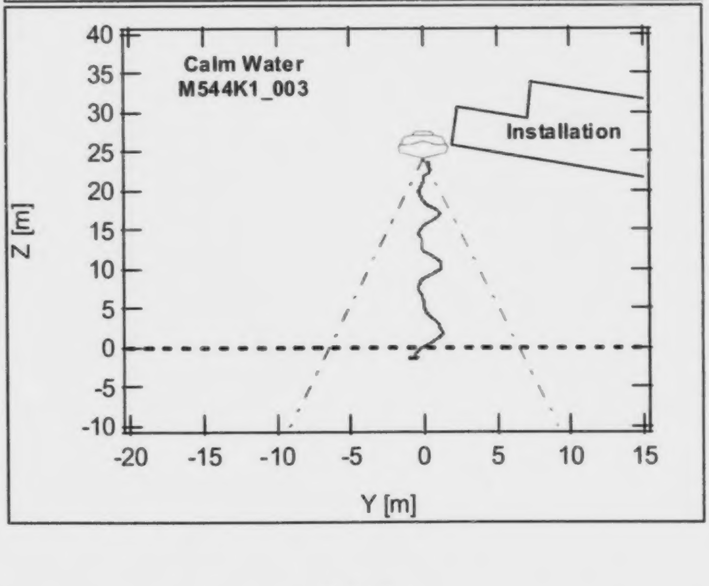
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M544K1_003
Installation
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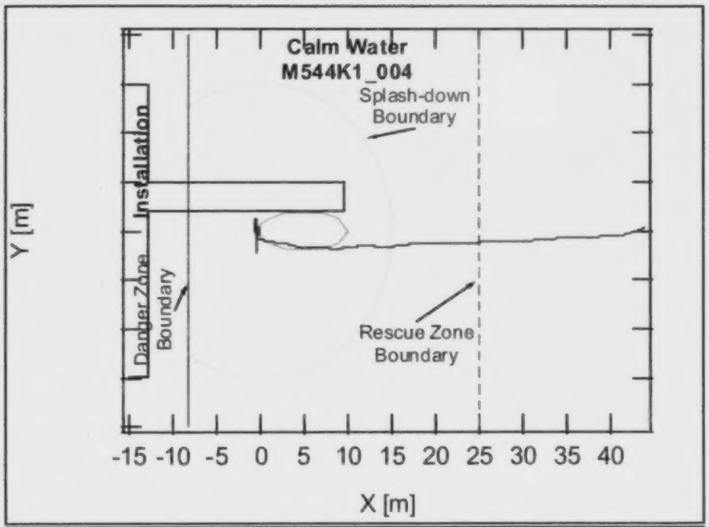
Y [m]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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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X [m]
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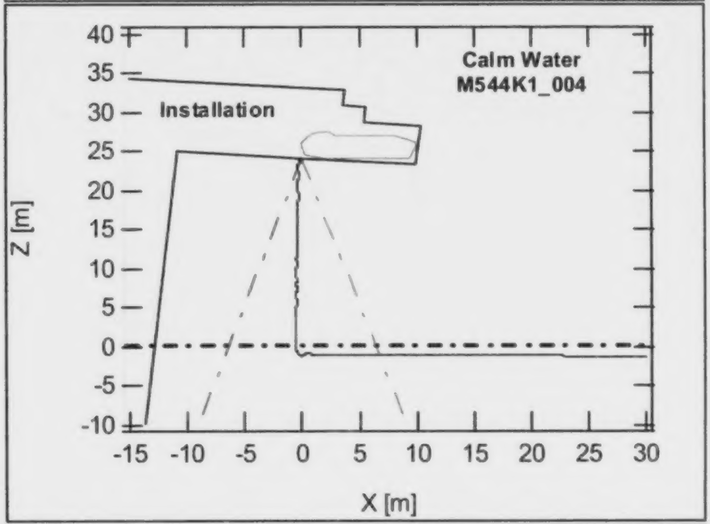
Calm Water
M544K1_004
Installation
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X [m]
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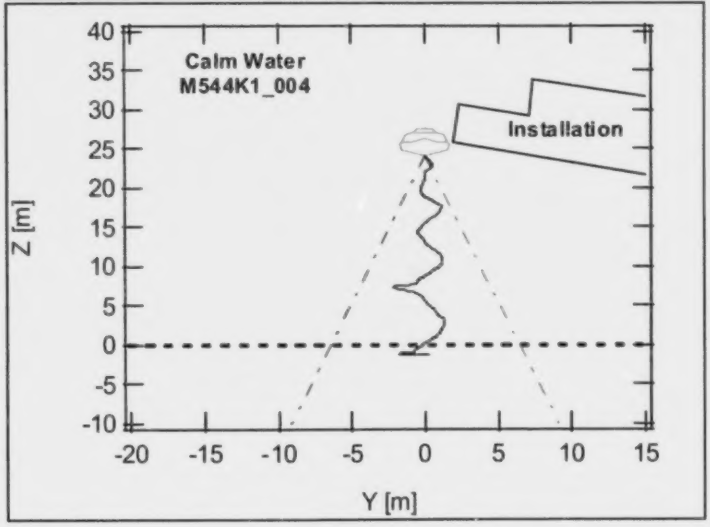
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Installation
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Y [m]
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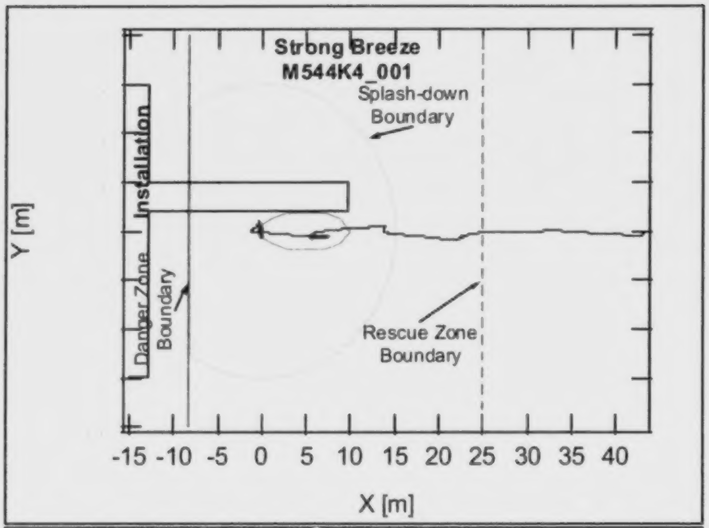
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Splash-down Boundary
Installation
Danger Zone
Boundary
Rescue Zone Boundary
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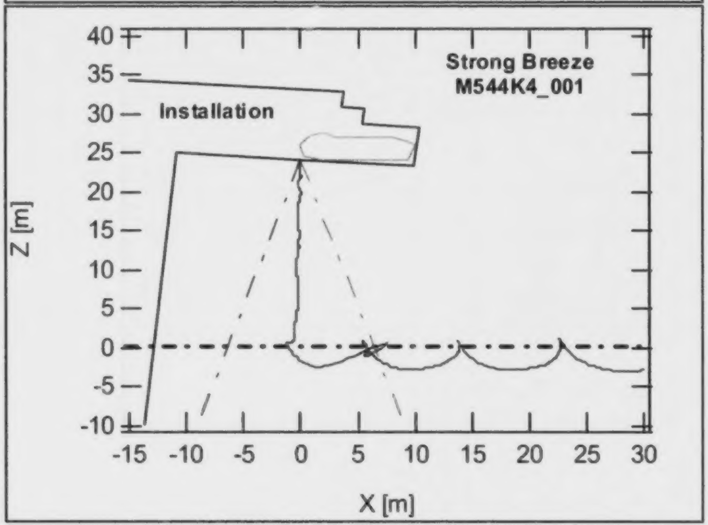
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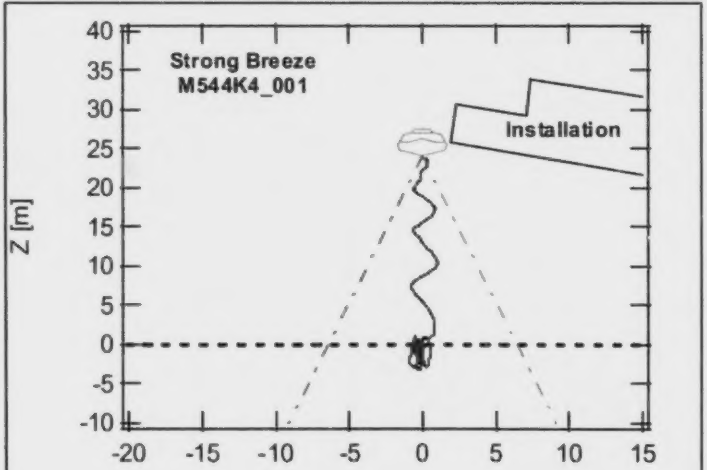
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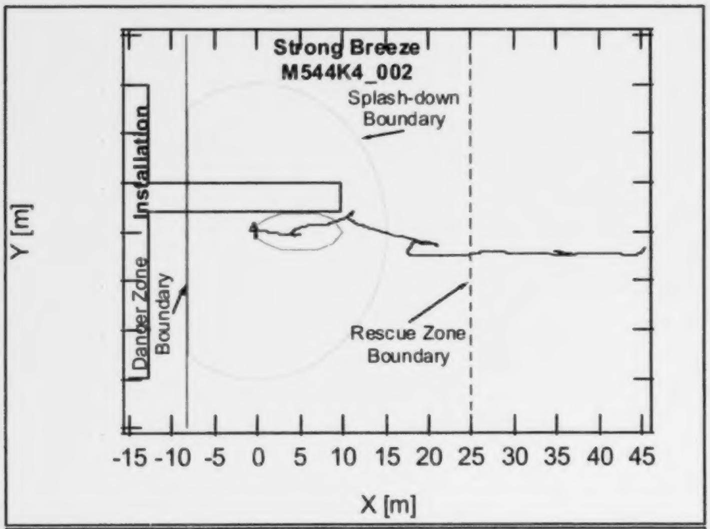
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Installation
Danger Zone Boundary
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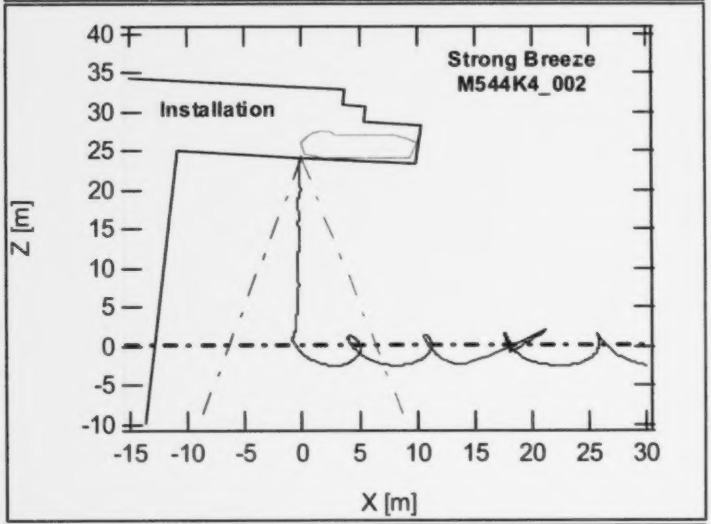
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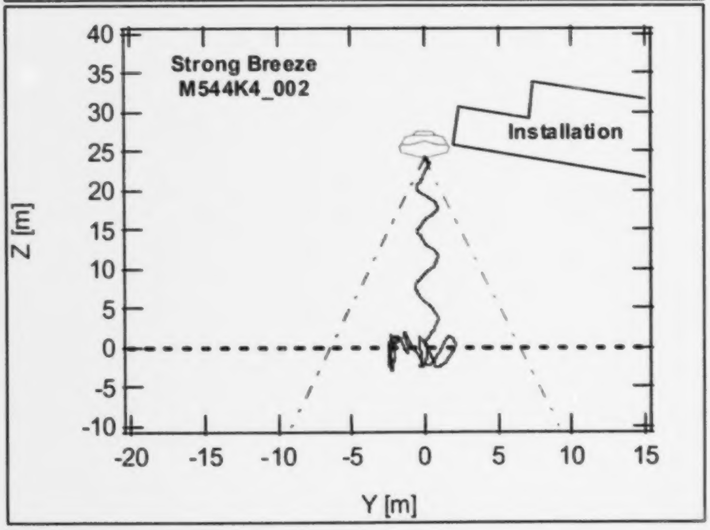
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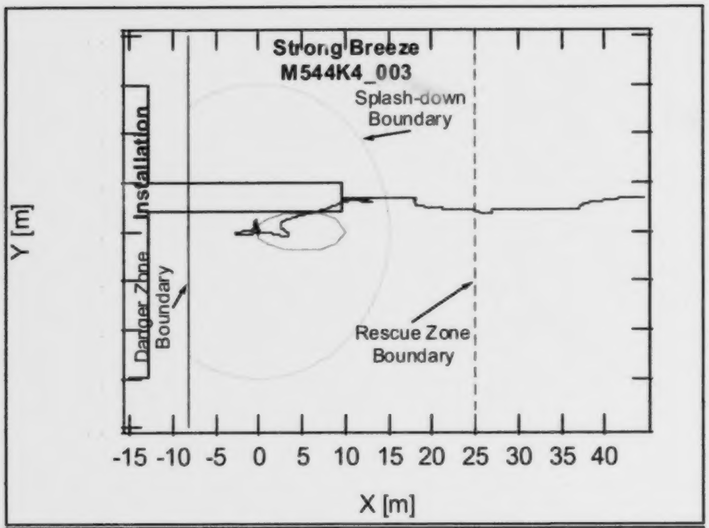
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Splash-down
Boundary
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Danger Zone
Boundary
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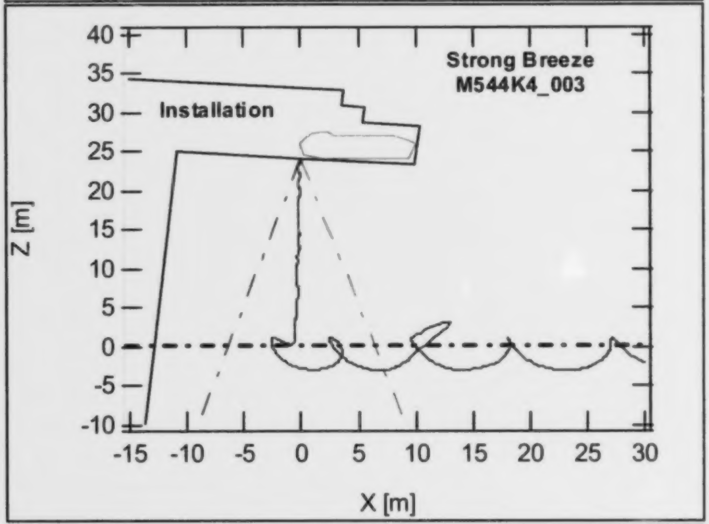
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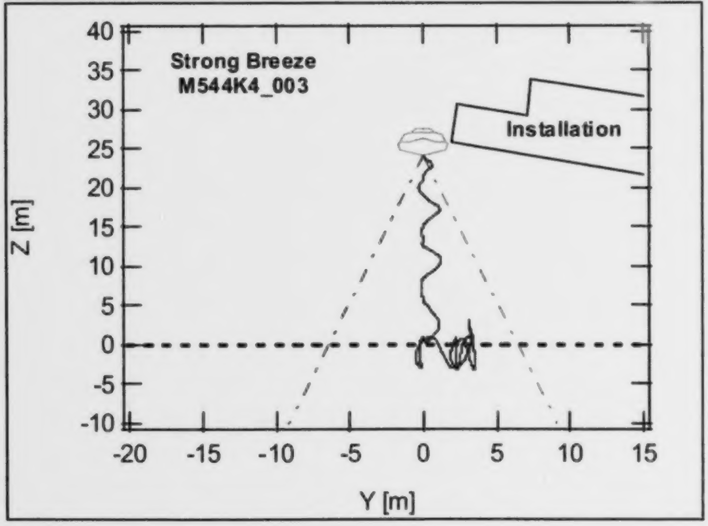
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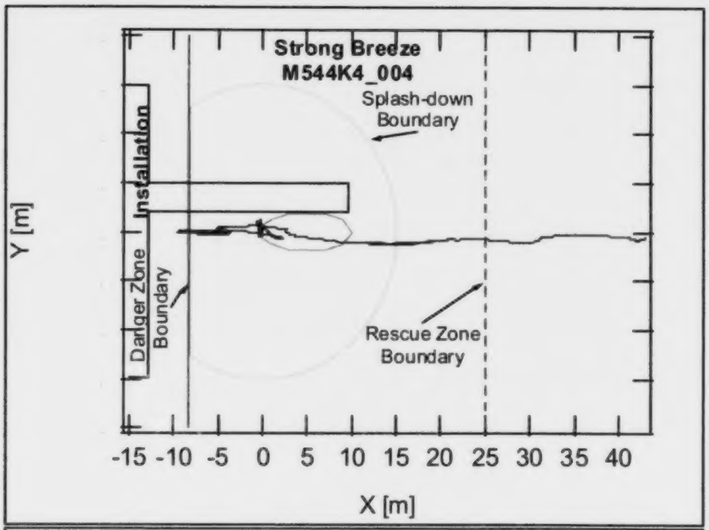
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Installation
Danger Zone
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Rescue Zone
Boundary
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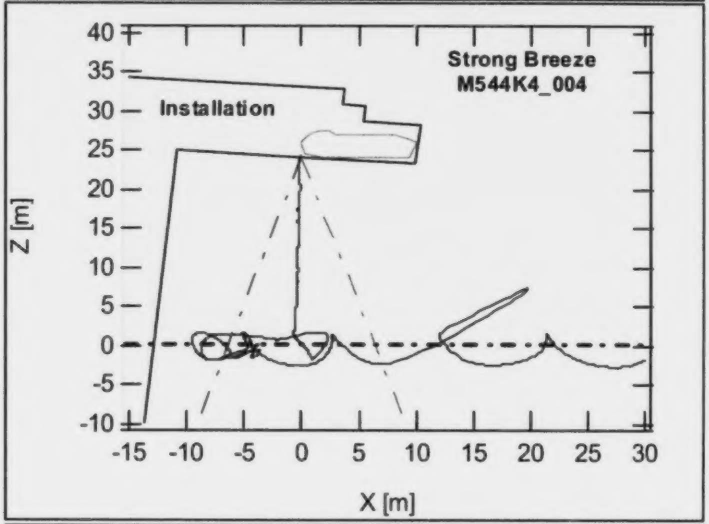
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Installation
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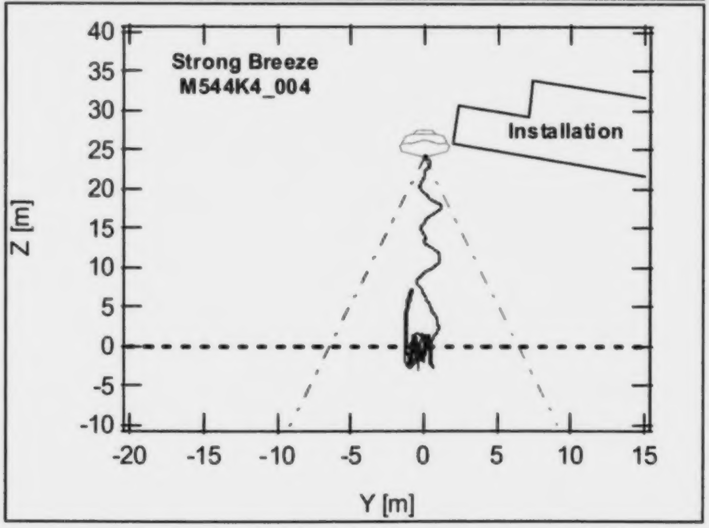
Strong Breeze
M544K4_004
Installation
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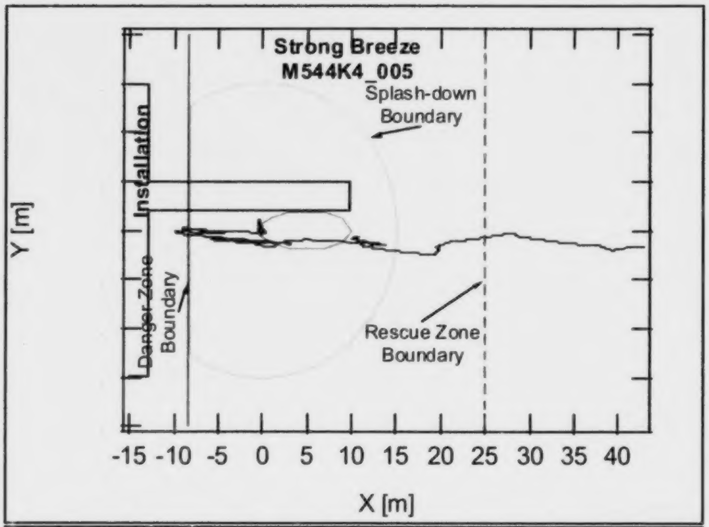
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Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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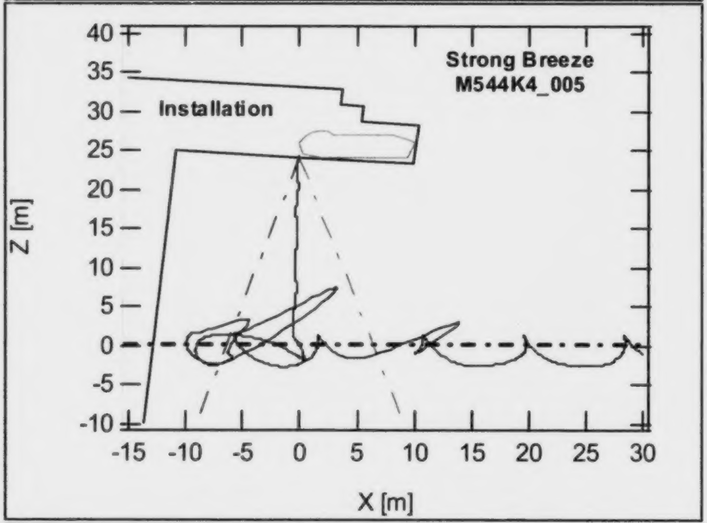
X [m]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Installation
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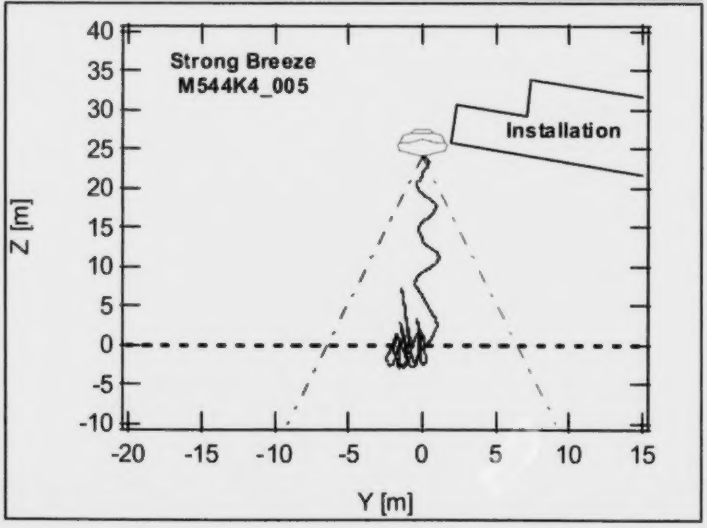
X [m]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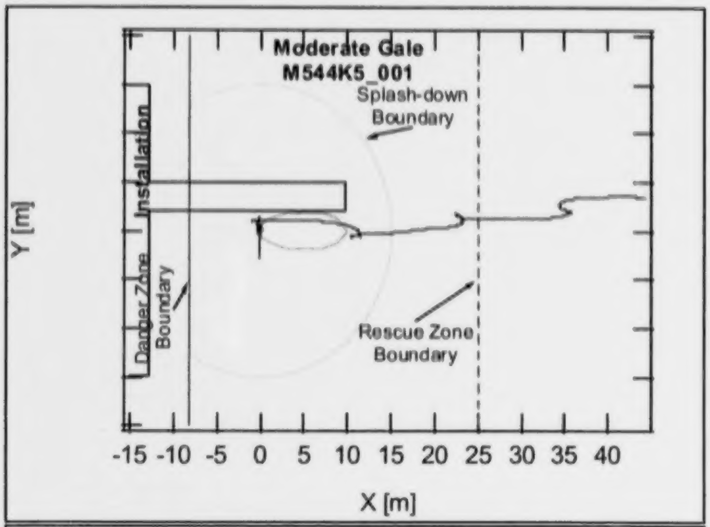
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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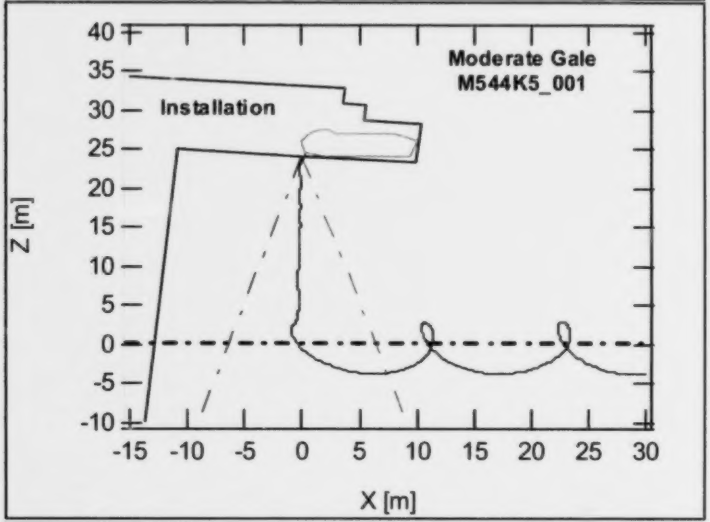
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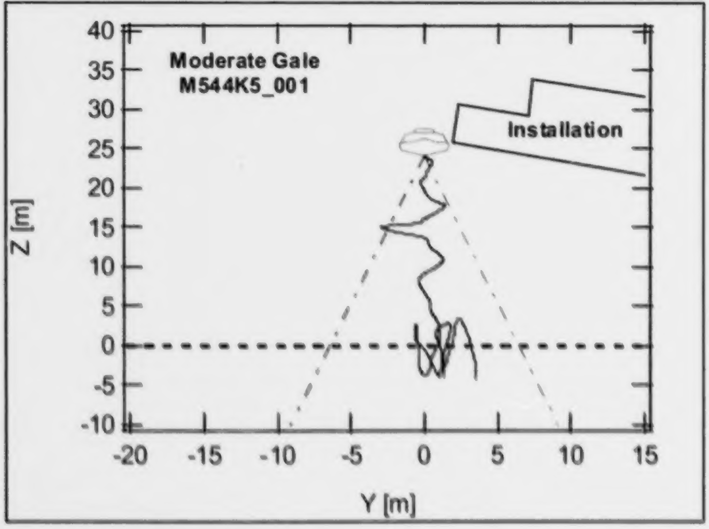
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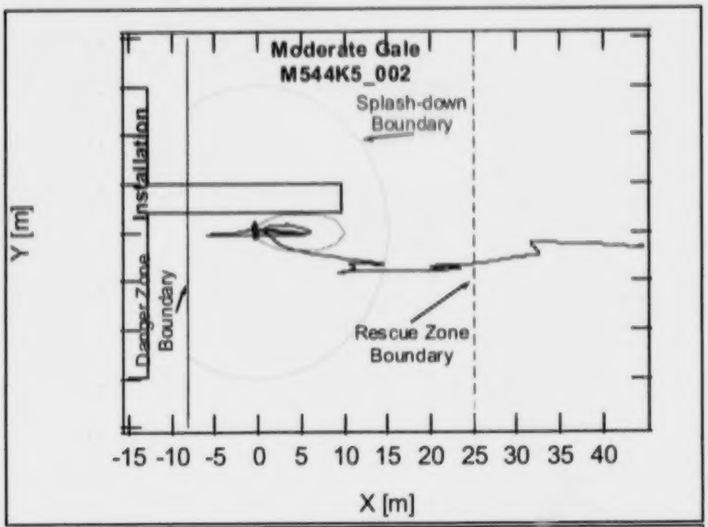
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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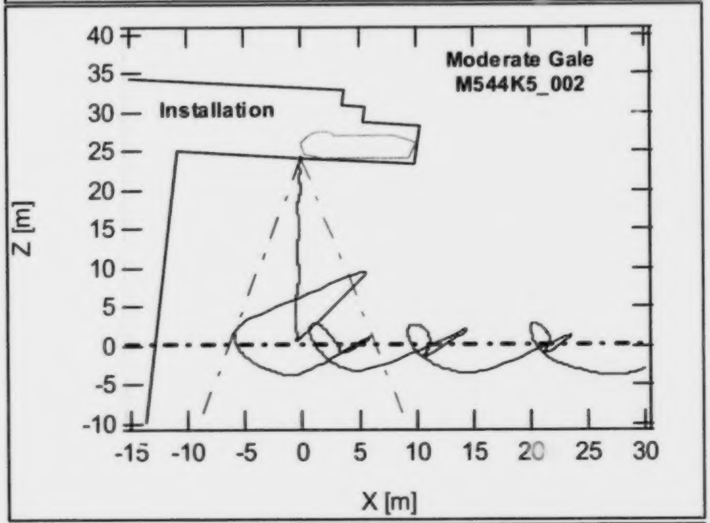
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Installation
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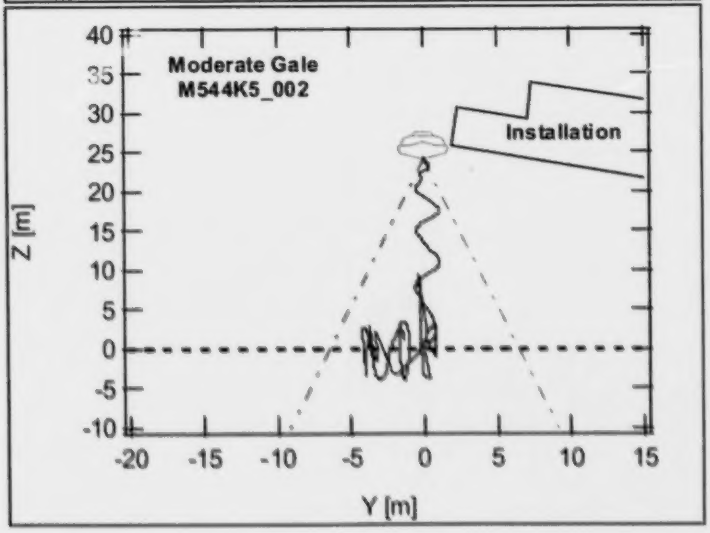
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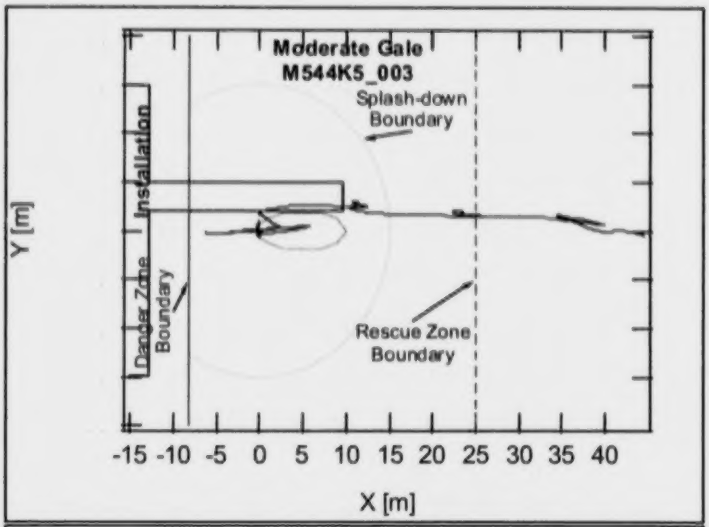
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Danger Zone Boundary
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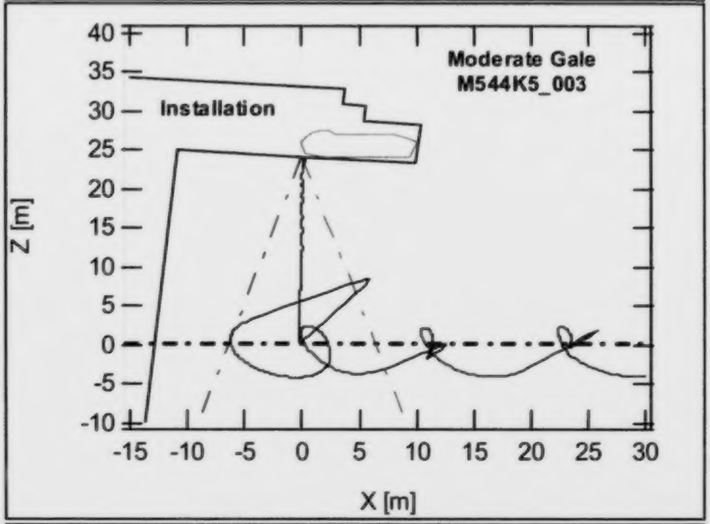
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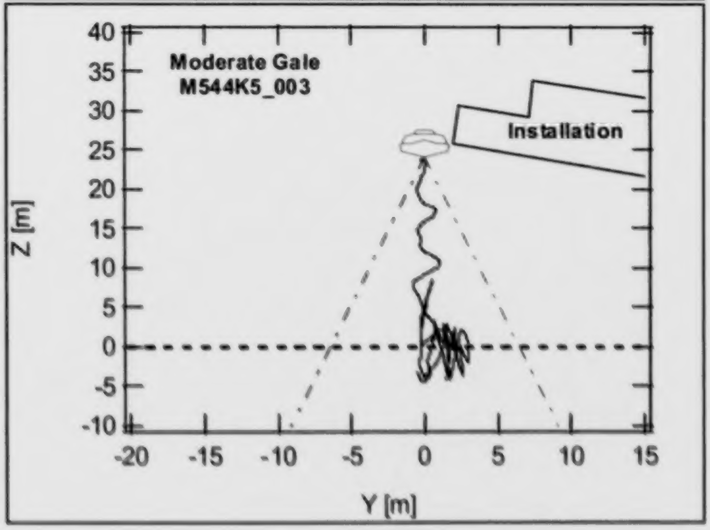
Moderate Gale
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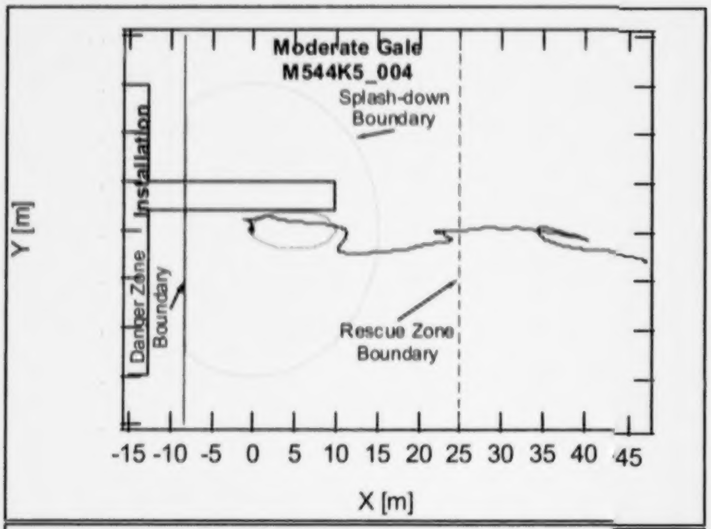
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Splash-down Boundary
Installation
Danger Zone Boundary
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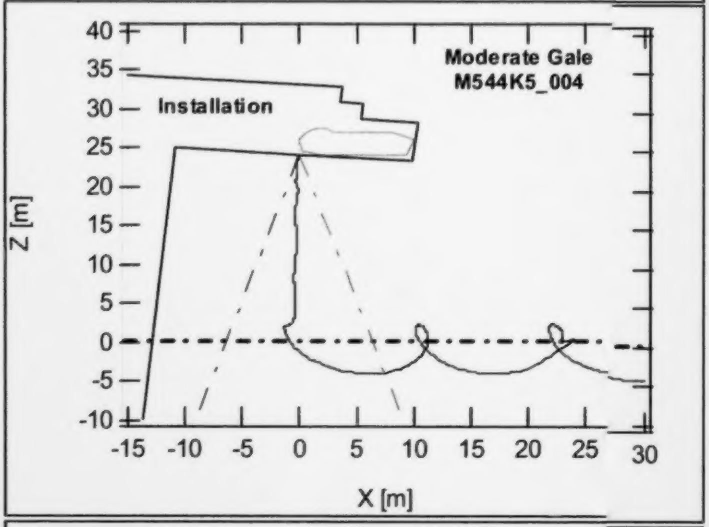
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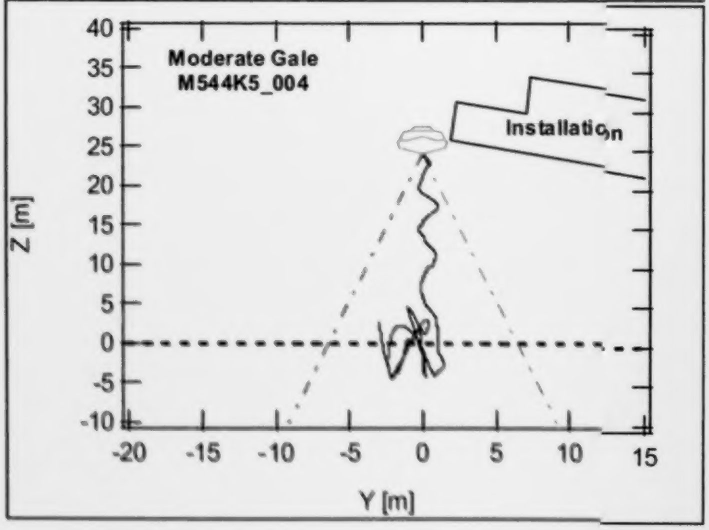
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Installation
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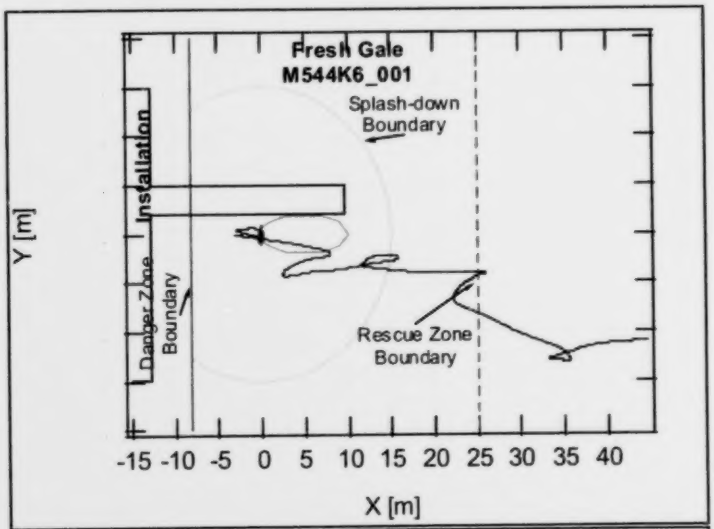
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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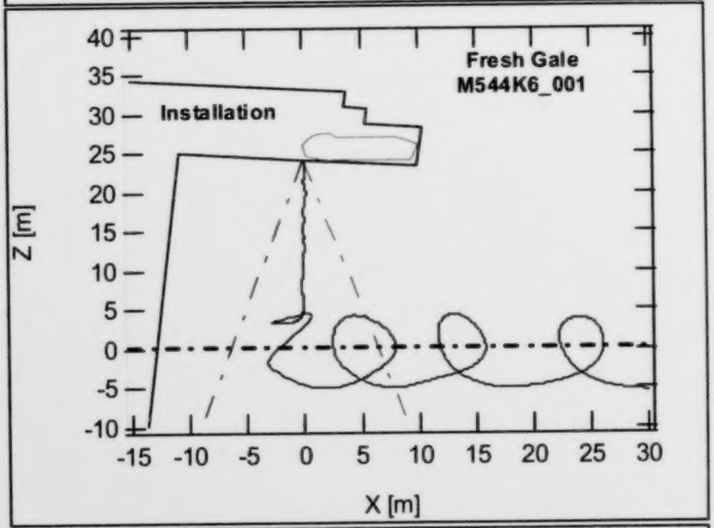
X [m]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Installation
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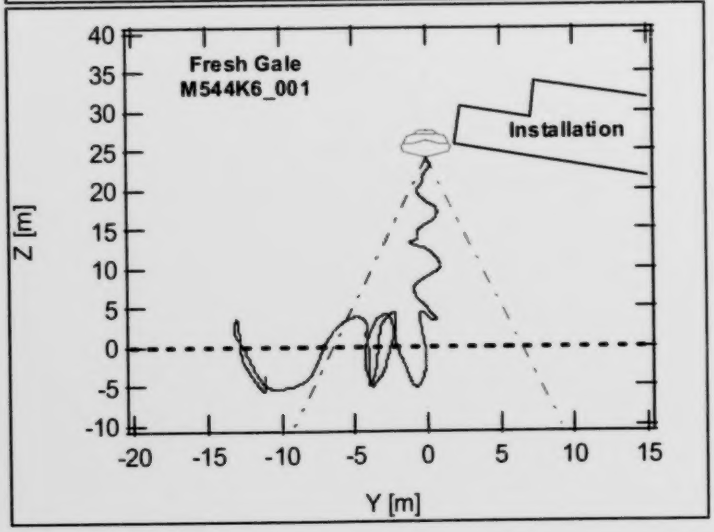
Fresh Gale
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Installation
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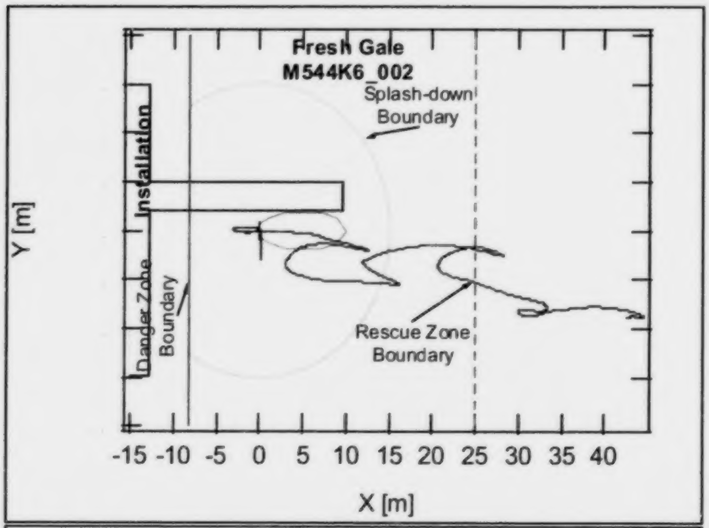
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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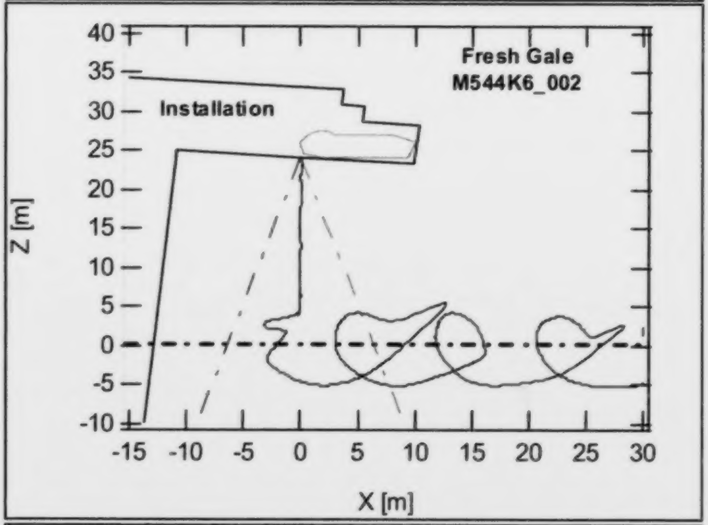
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Installation
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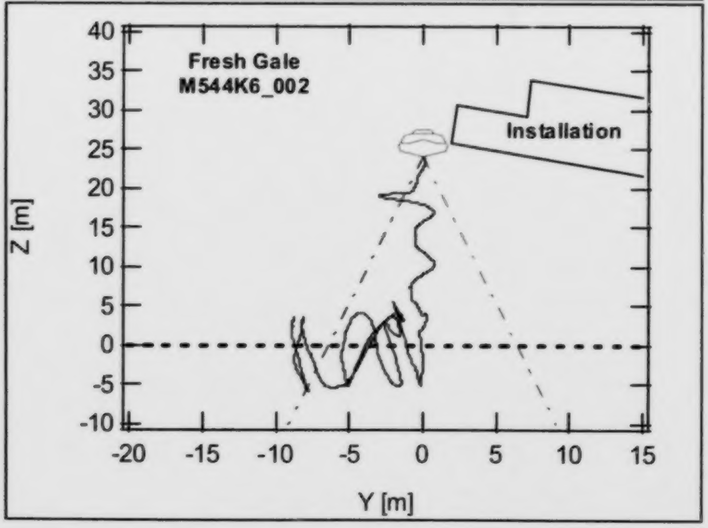
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Installation
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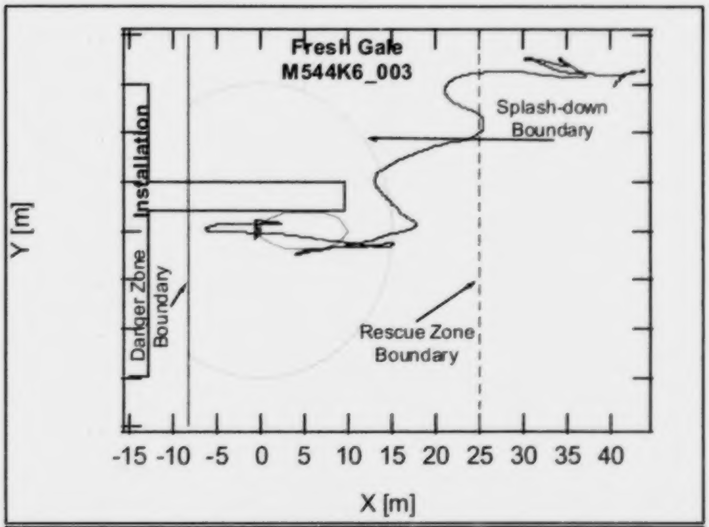
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Installation
Splash-down
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Danger Zone
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Rescue Zone
Boundary
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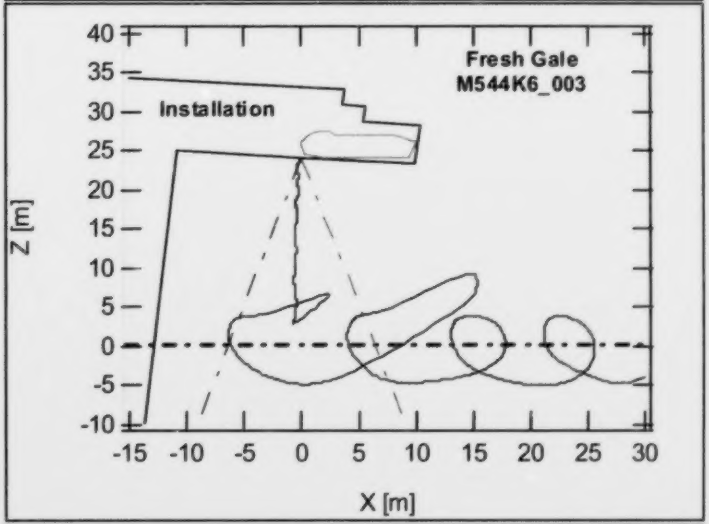
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Installation
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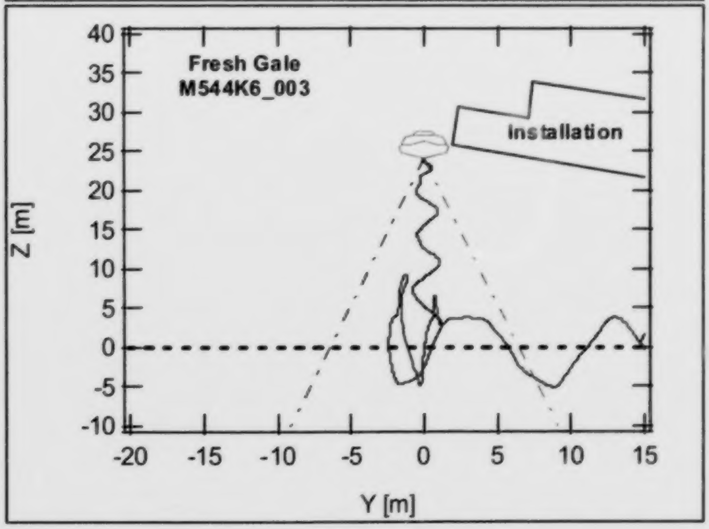
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Installation
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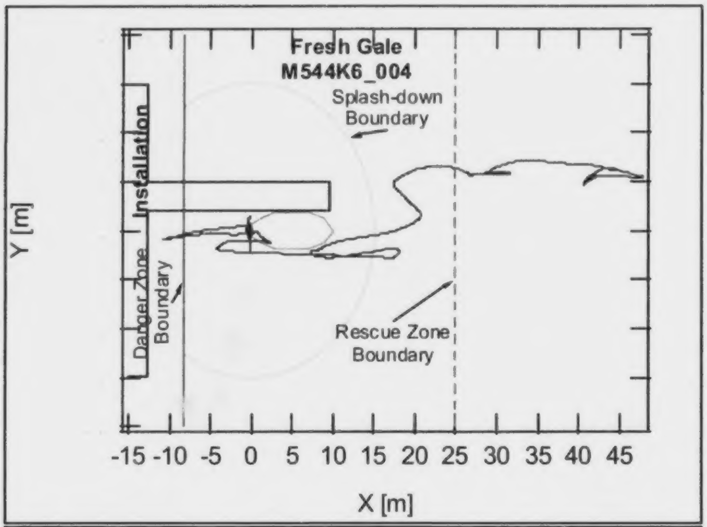
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Installation
Danger Zone Boundary
Rescue Zone Boundary
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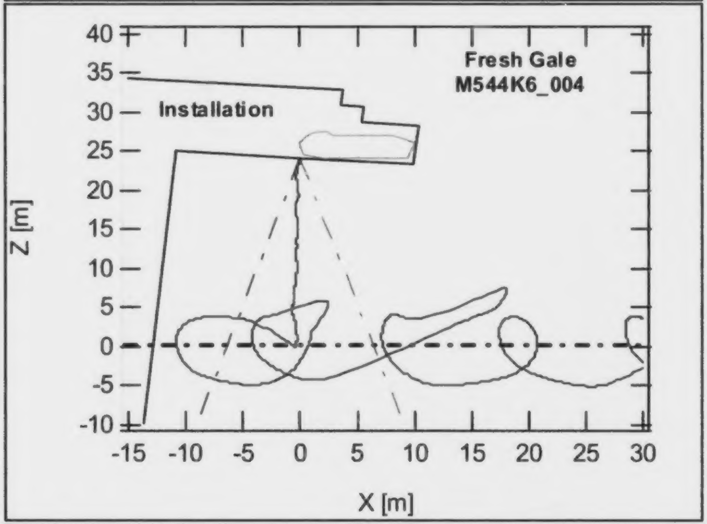
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Installation
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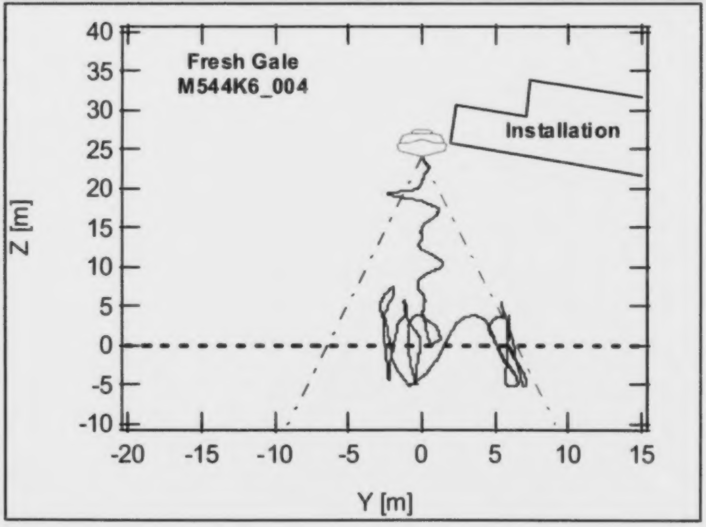
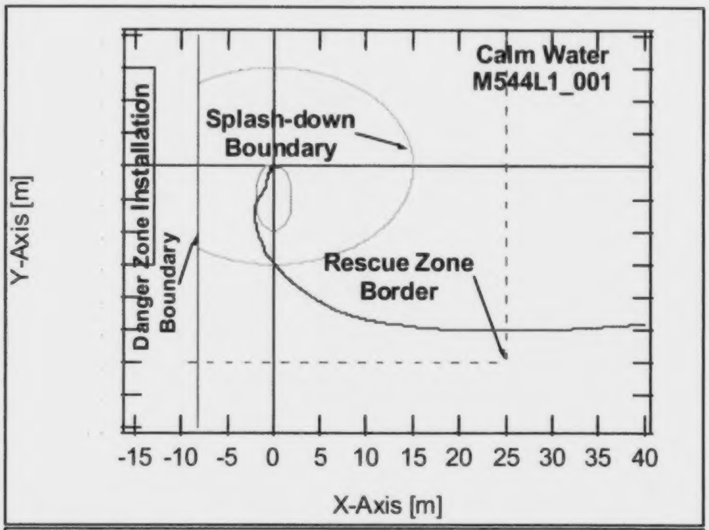
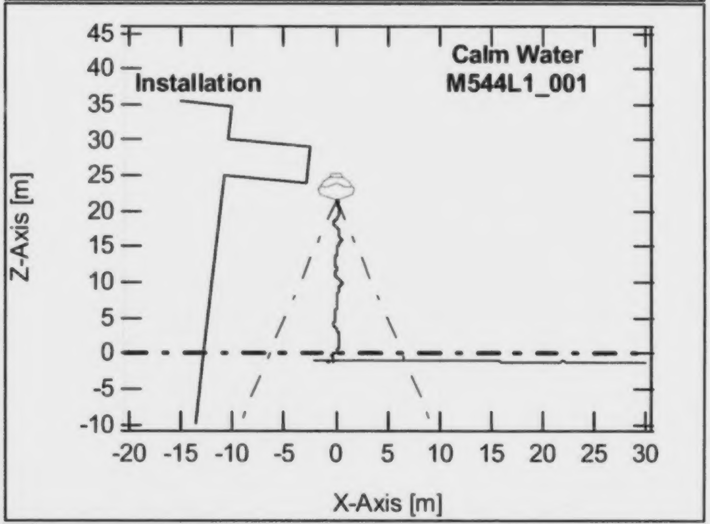
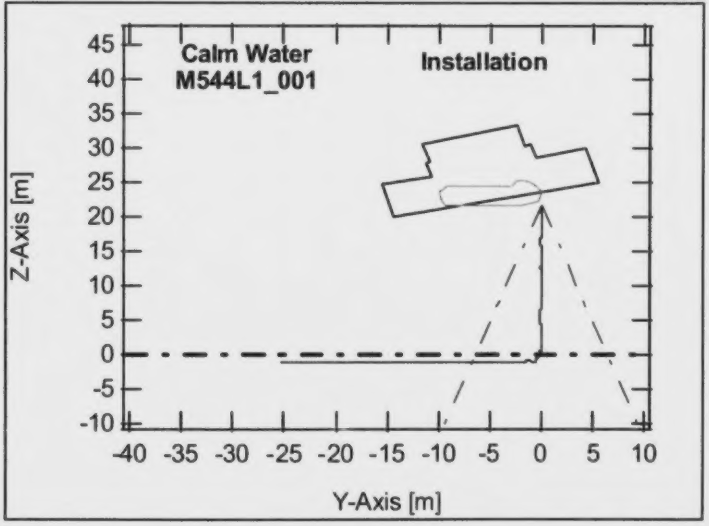
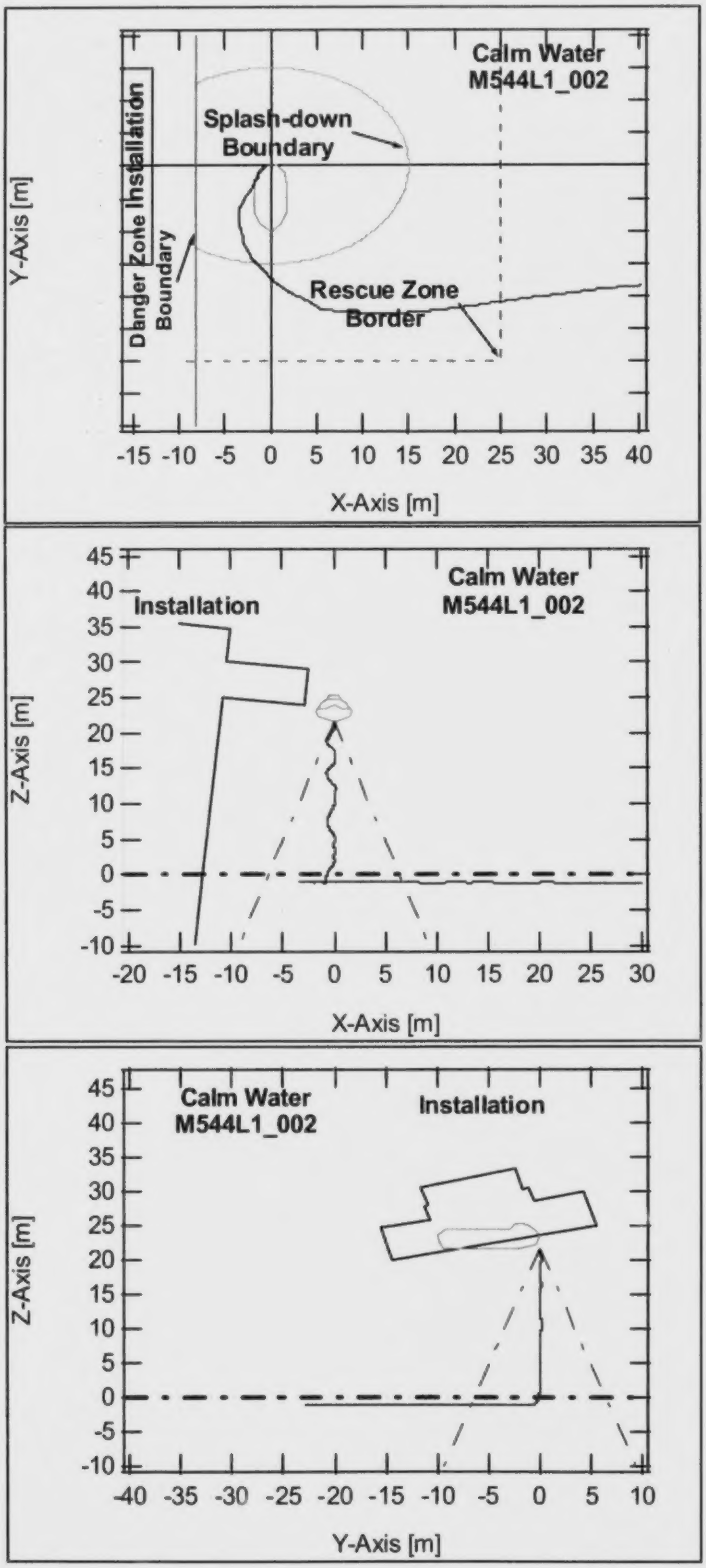
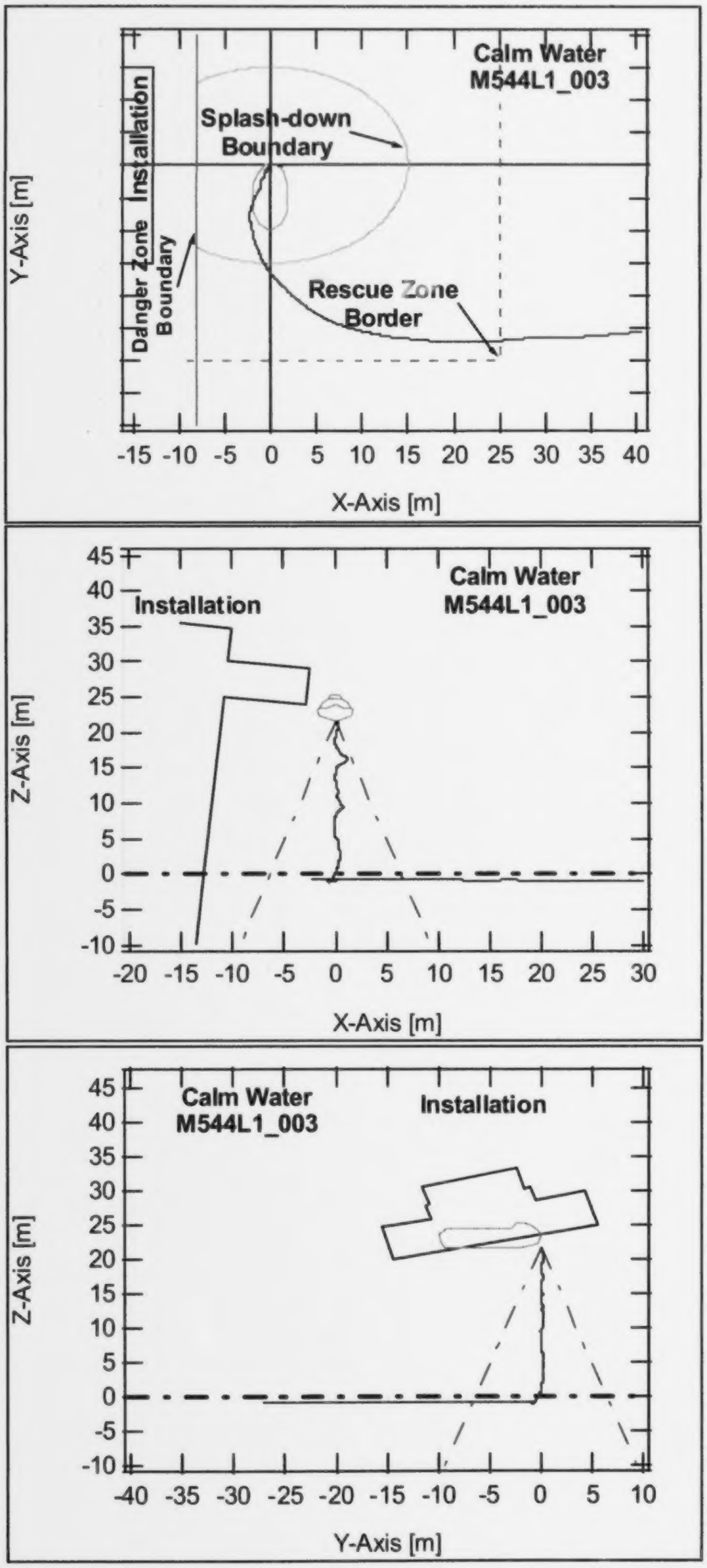

Fresh Gale
M544K6_004
Installation
Z [m]
40
35
30
25
20
15
10
5
0
-5
-10
-20
-15
-10
-5
0
5
10
15
Y [m]


Calm Water
M544L1_001
Splash-down
Boundary
Danger Zone Installation
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Installation
Calm Water
M544L1_001
45
40
35
30
25
20
15
10
5
0
-5
-10
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544L1_001
Installation
45
40
35
30
25
20
15
10
5
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544L1_002
Splash-down Boundary
Danger Zone Installation Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]
Installation
Calm Water
M544L1_002
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Calm Water
M544L1_002
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544L1_003
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
Calm Water
M544L1_003
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Calm Water
M544L1_003
Installation
Z-Axis [m]
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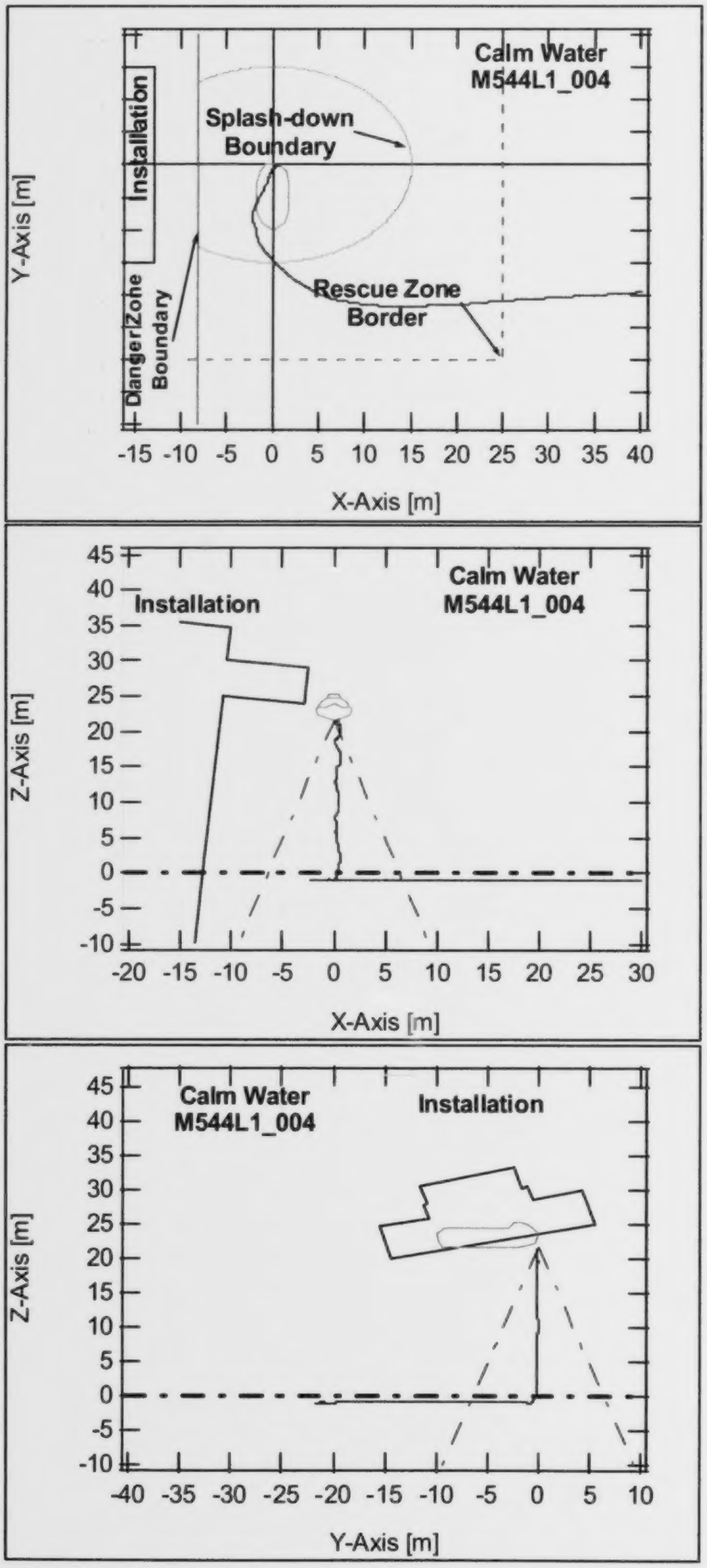
Y-Axis [m]


Calm Water
M544L1_004
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]
Calm Water
M544L1_004
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Calm Water
M544L1_004
Installation
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Z-Axis [m]
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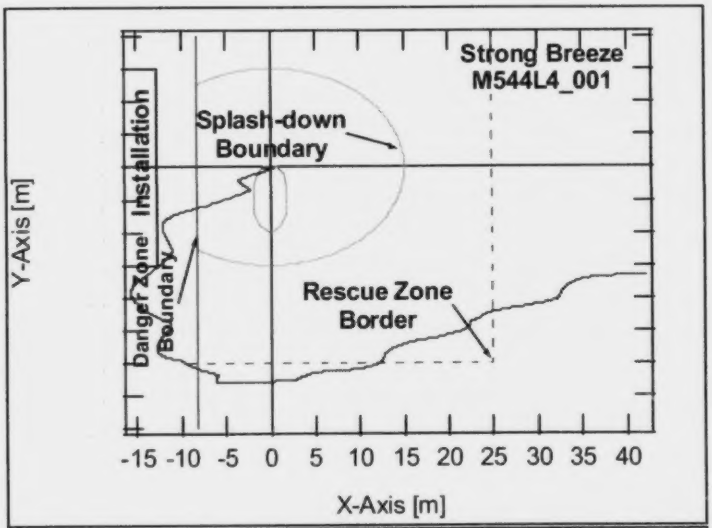
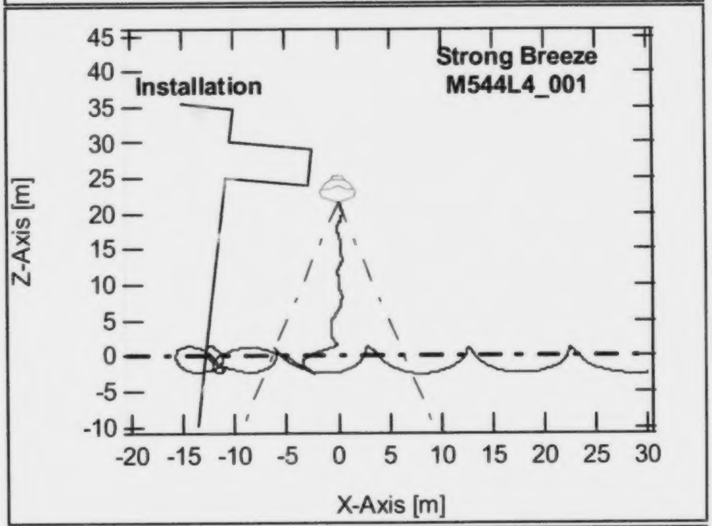
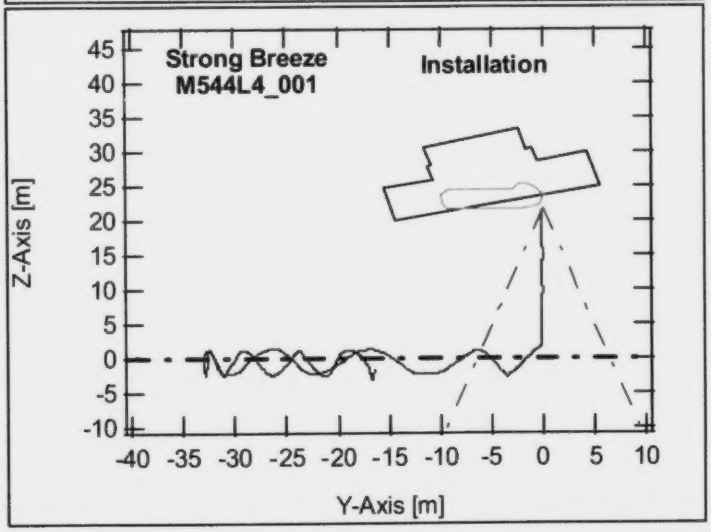
Y-Axis [m]


Strong Breeze
M544L4_001
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Strong Breeze
M544L4_001
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544L4_001
Installation
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Z-Axis [m]
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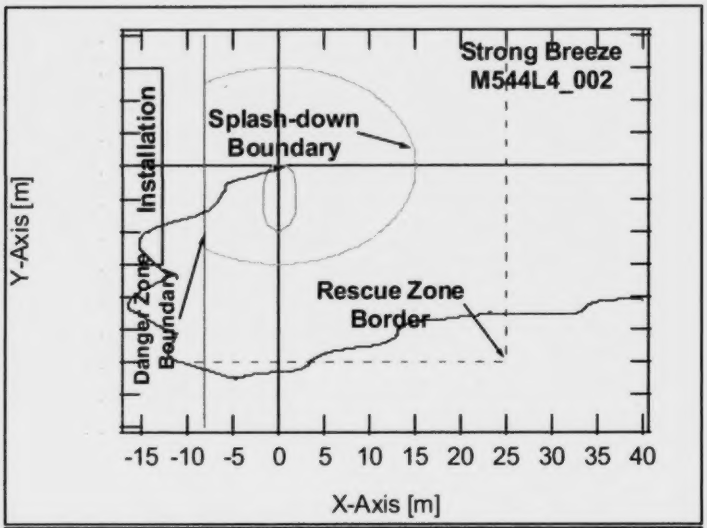
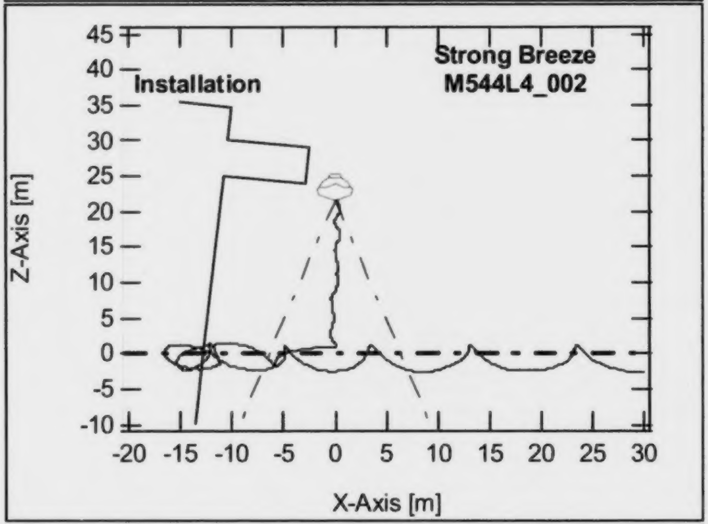
Y-Axis [m]


Strong Breeze
M544L4_002
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Strong Breeze
M544L4_002
Installation
45
40
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20
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10
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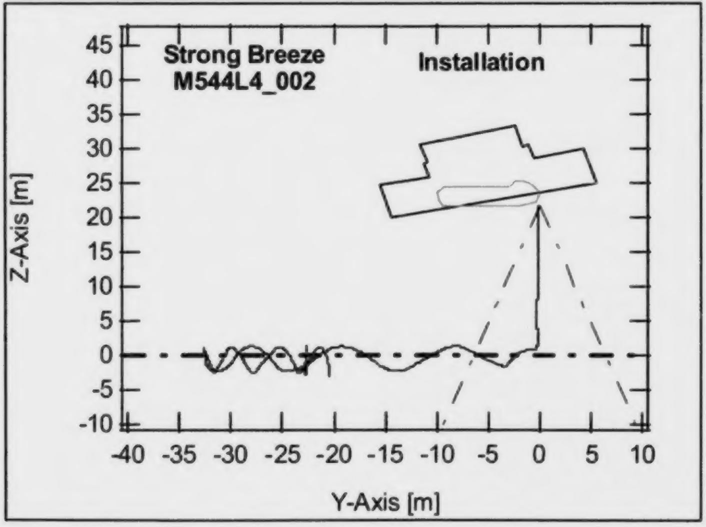
0
-5
-10
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544L4_002
Installation
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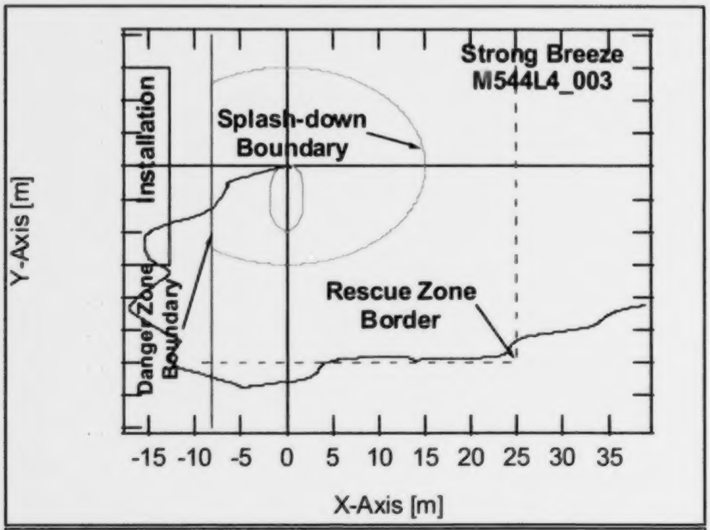
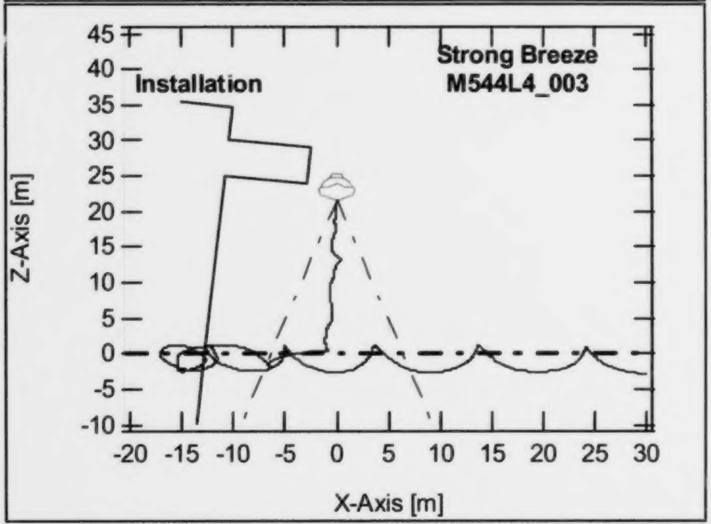
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Strong Breeze
M544L4_003
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15
-10
-5
0
5
10
15
20
25
30
35
X-Axis [m]


Strong Breeze
M544L4_003
Installation
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20
15
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0
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-10
Z-Axis [m]
-20
-15
-10
-5
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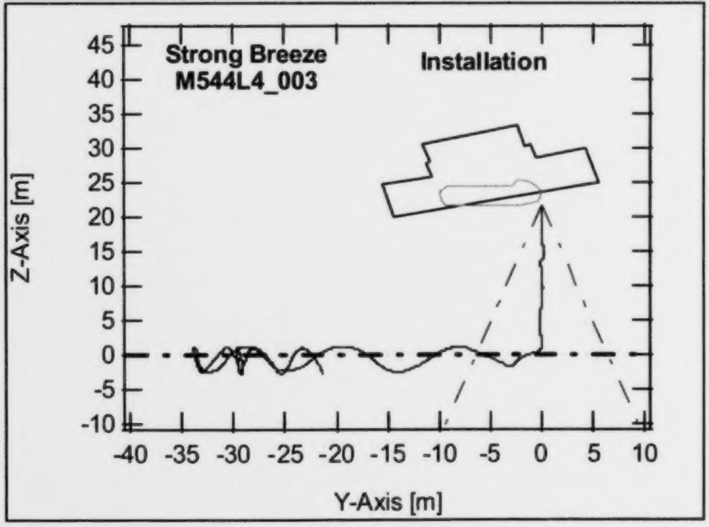
20
25
30
X-Axis [m]


Strong Breeze
M544L4_003
Installation
45
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0
-5
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Z-Axis [m]
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-35
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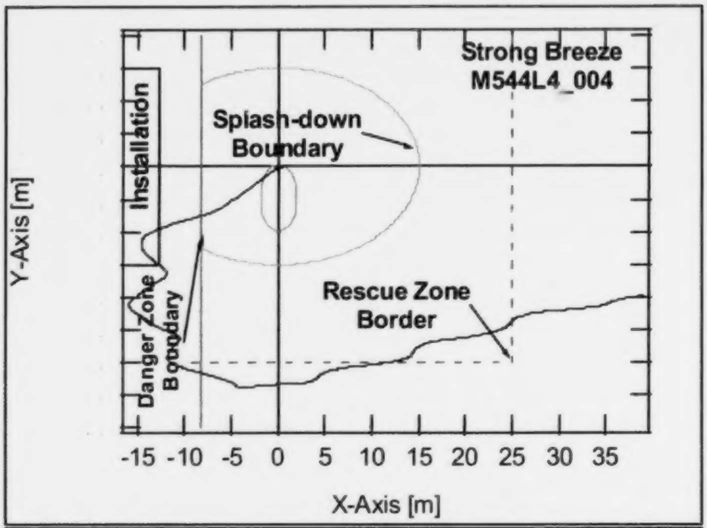
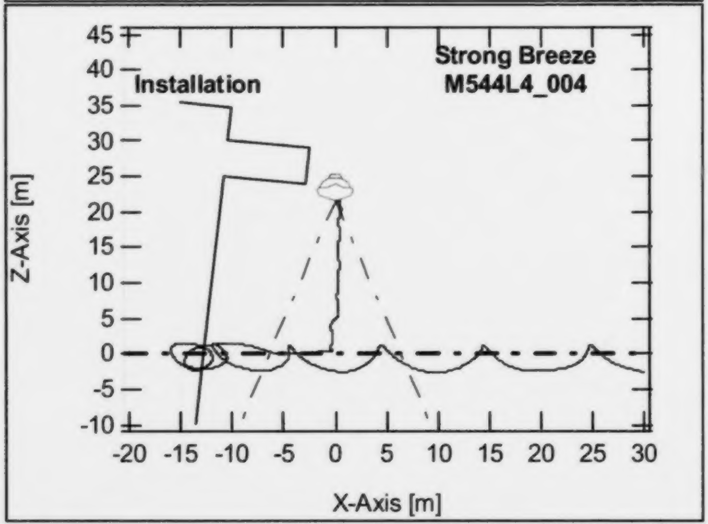
-25
-20
-15
-10
-5
0
5
10
Y-Axis [m]


Strong Breeze
M544L4_004
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35
X-Axis [m]


Strong Breeze
M544L4_004
Installation
45
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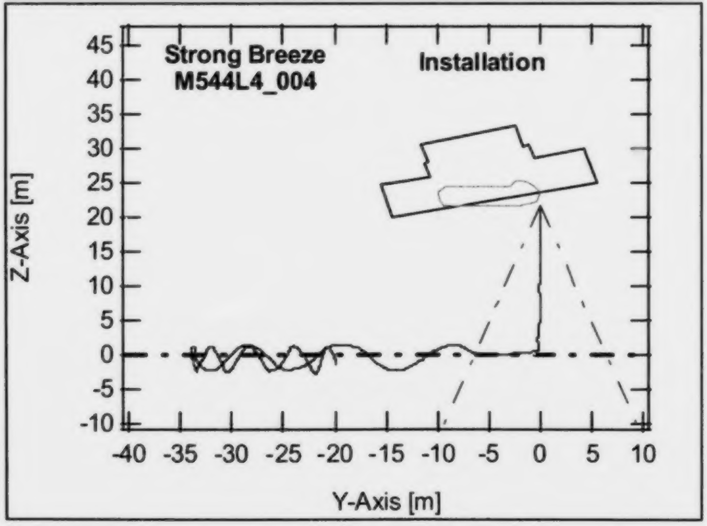
20
15
10
5
0
-5
-10
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544L4_004
Installation
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30
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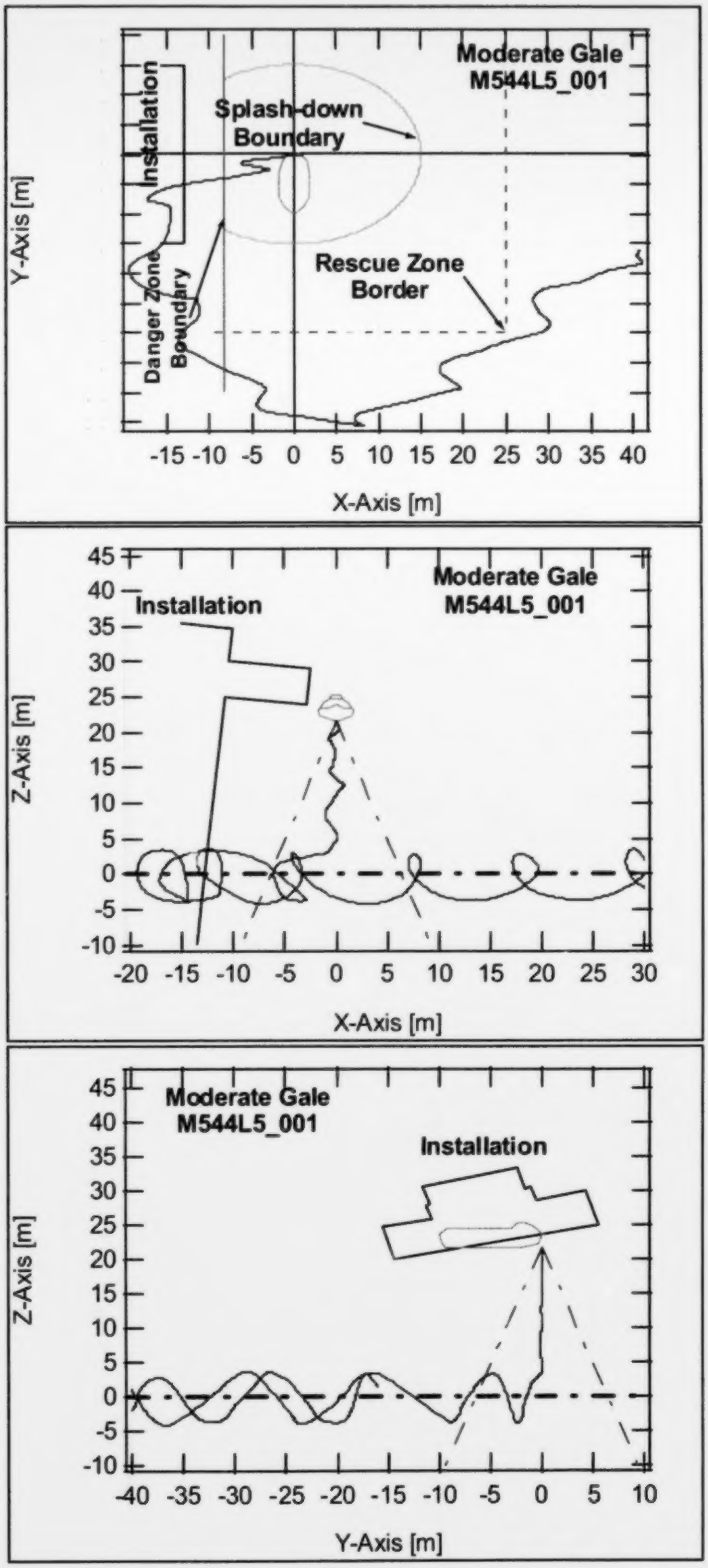
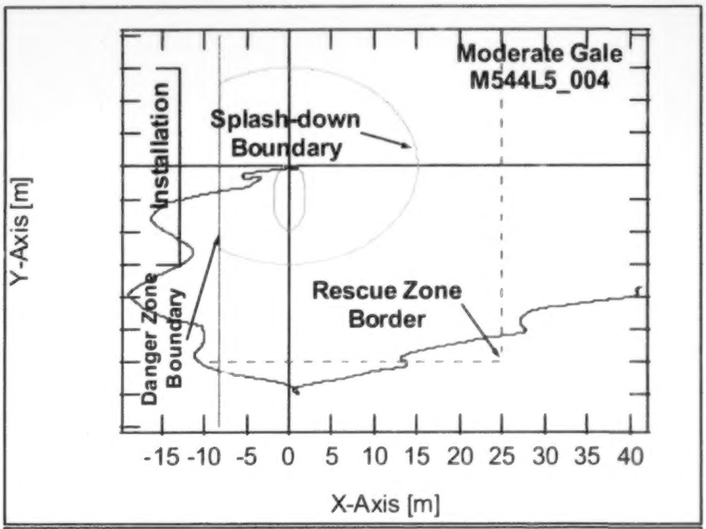
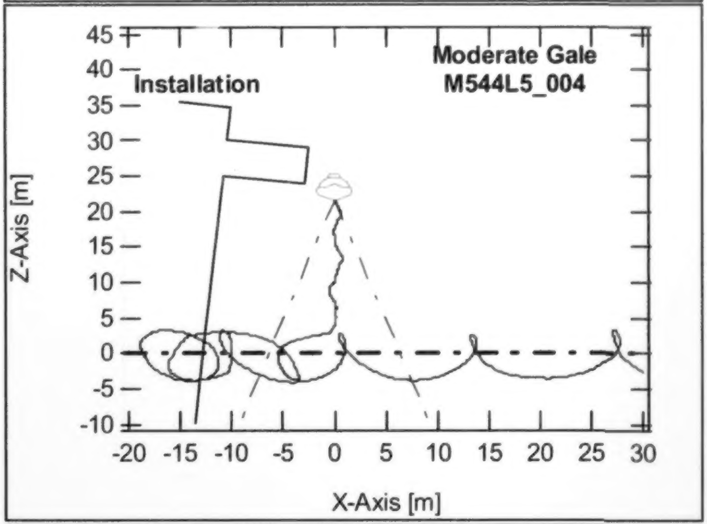
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Gale
M544L5_001
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]
Moderate Gale
M544L5_001
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Moderate Gale
M544L5_001
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Gale
M544L5_004
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Moderate Gale
M544L5_004
Installation
Z-Axis [m]
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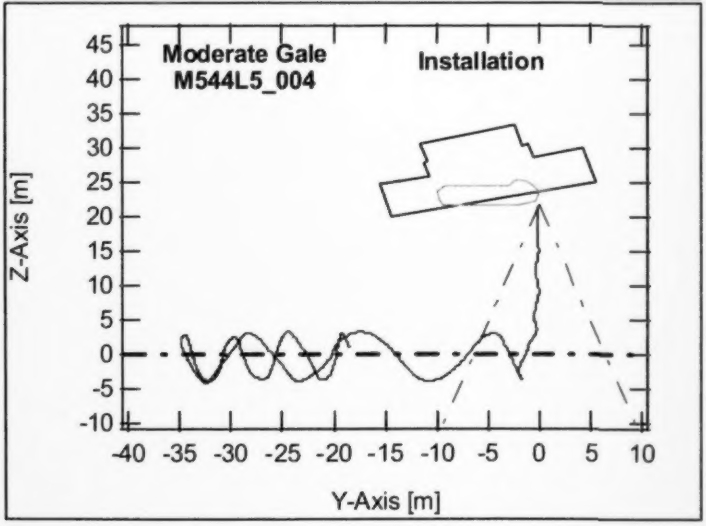
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544L5_004
Installation
Z-Axis [m]
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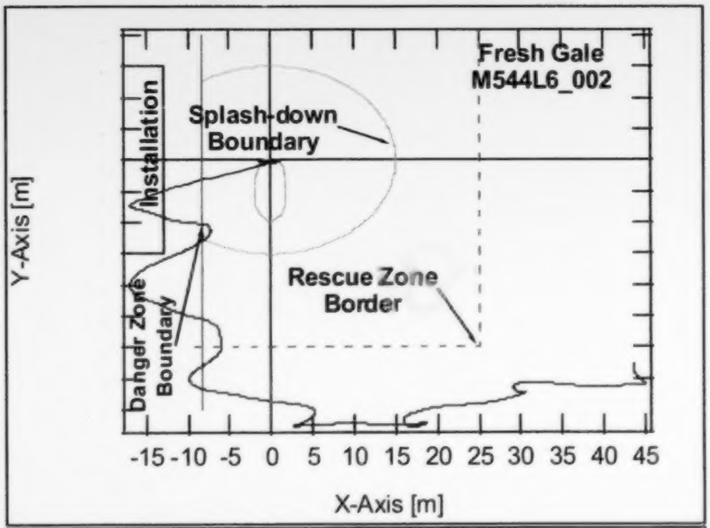
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Gale
M544L6_002
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
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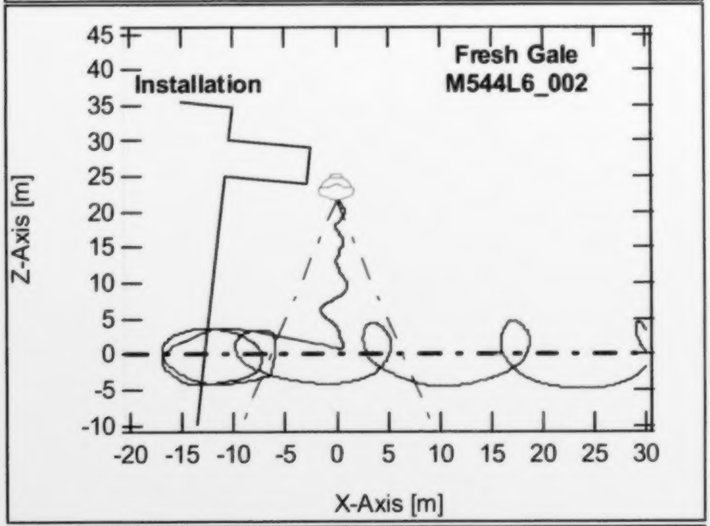
X-Axis [m]


Fresh Gale
M544L6_002
Installation
45
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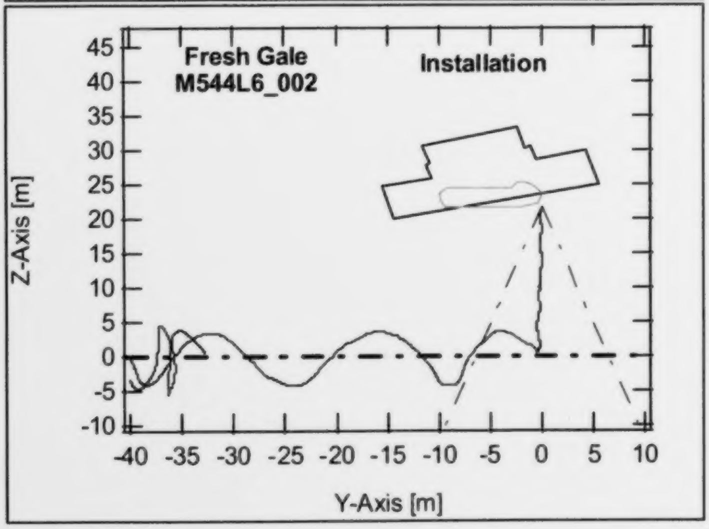
-10
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Fresh Gale
M544L6_002
Installation
45
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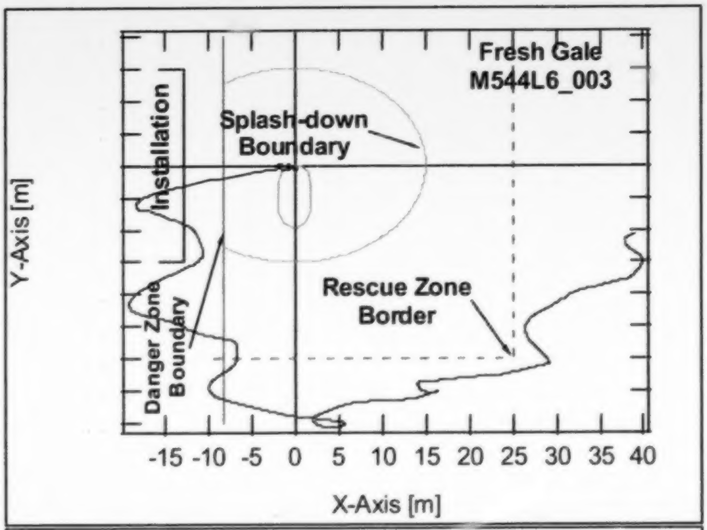
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Gale
M544L6_003
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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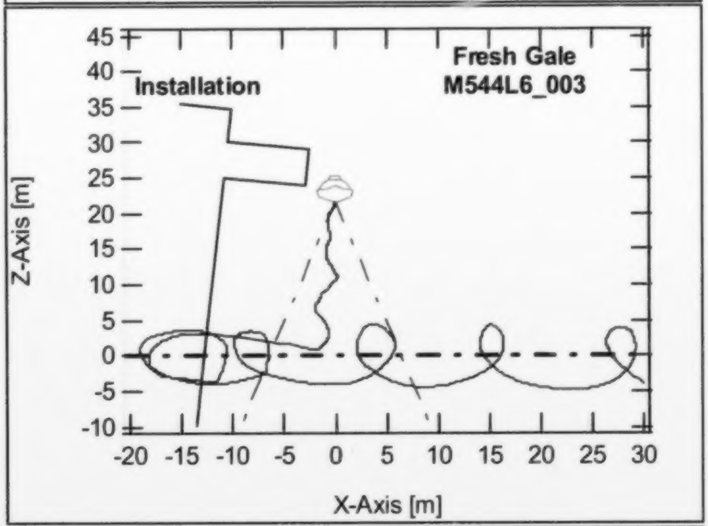
X-Axis [m]


Fresh Gale
M544L6_003
Installation
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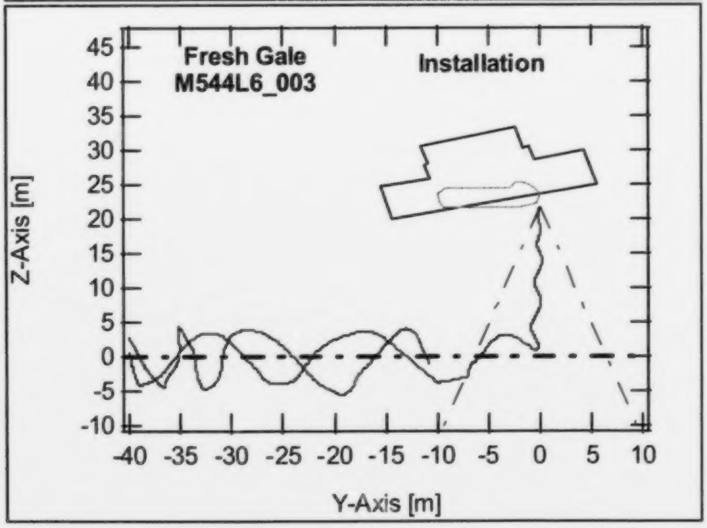
-10
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Fresh Gale
M544L6_003
Installation
45
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-10
Z-Axis [m]
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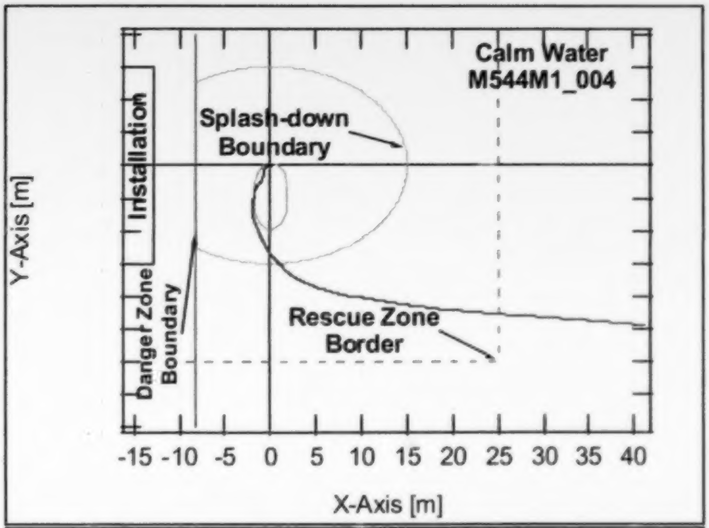
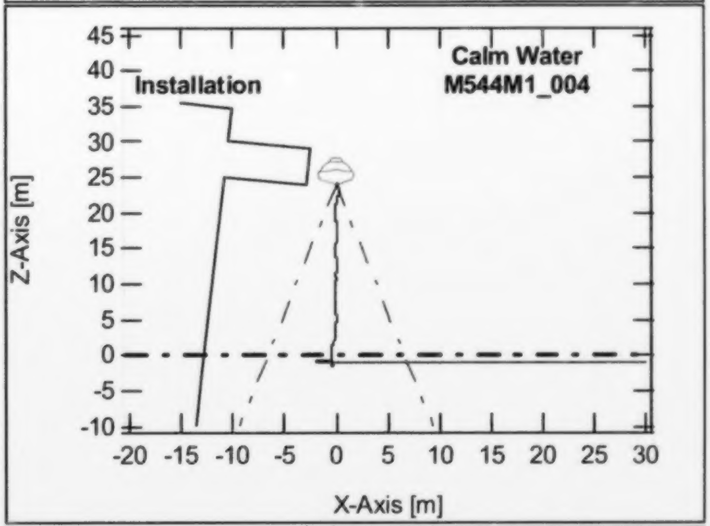
Y-Axis [m]


Calm Water
M544M1_004
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Calm Water
M544M1_004
Installation
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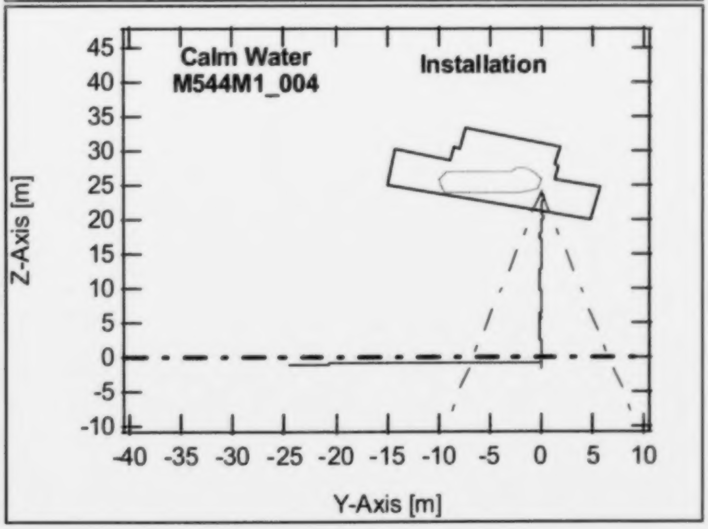
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544M1_004
Installation
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Z-Axis [m]
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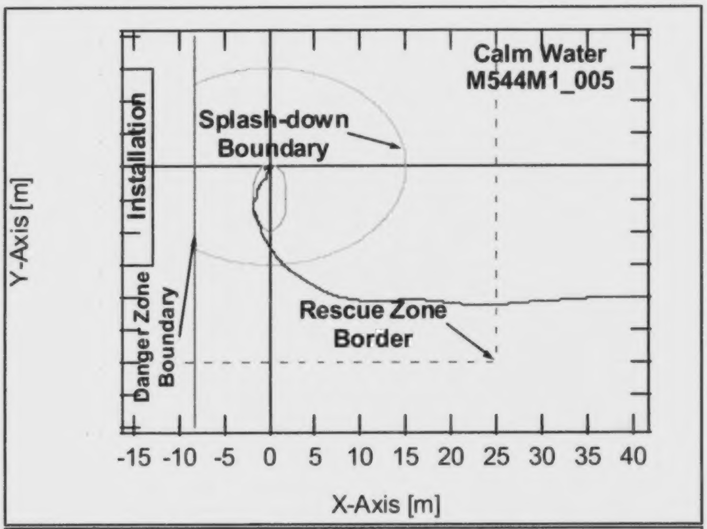
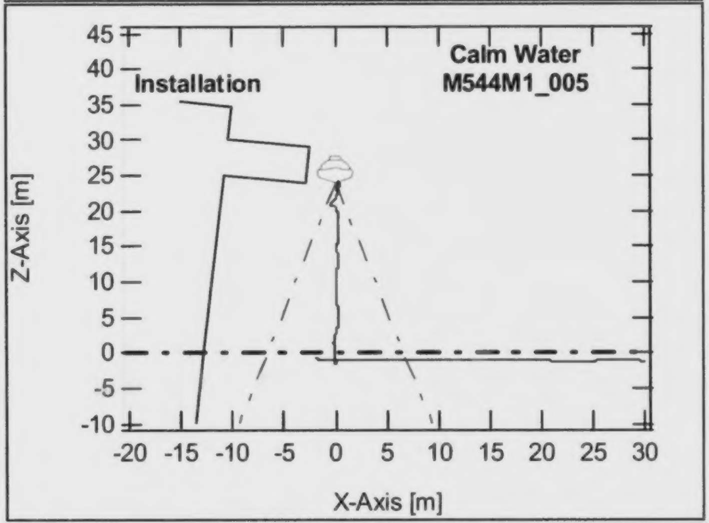
Y-Axis [m]


Calm Water
M544M1_005
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Installation
Calm Water
M544M1_005
Z-Axis [m]
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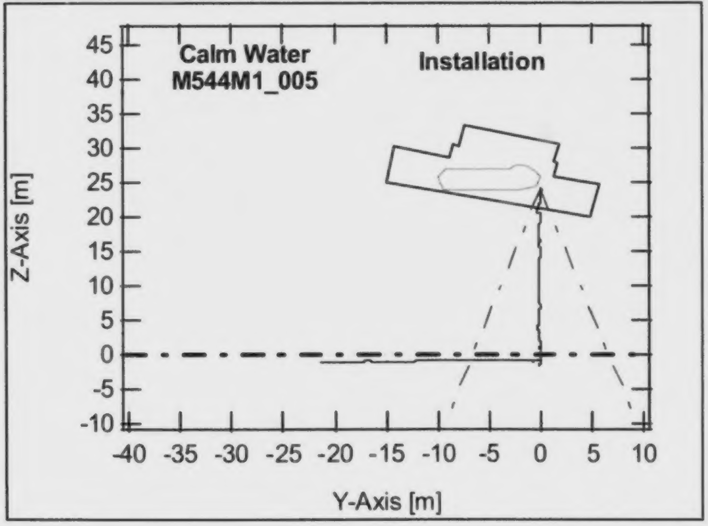
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544M1_005
Installation
Z-Axis [m]
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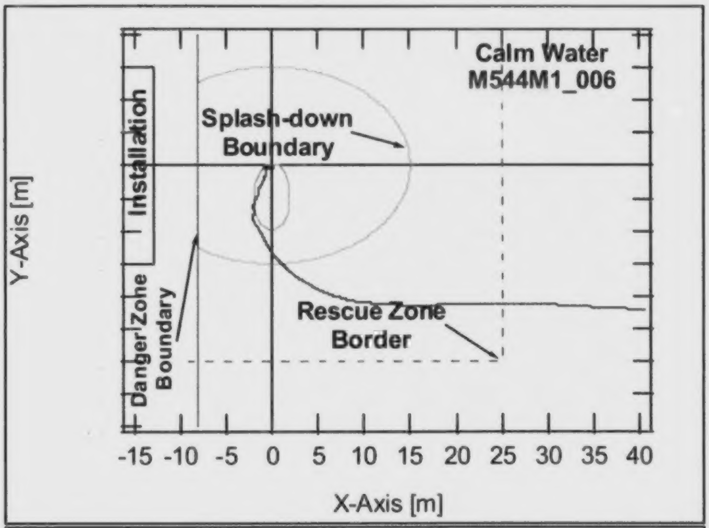
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544M1_006
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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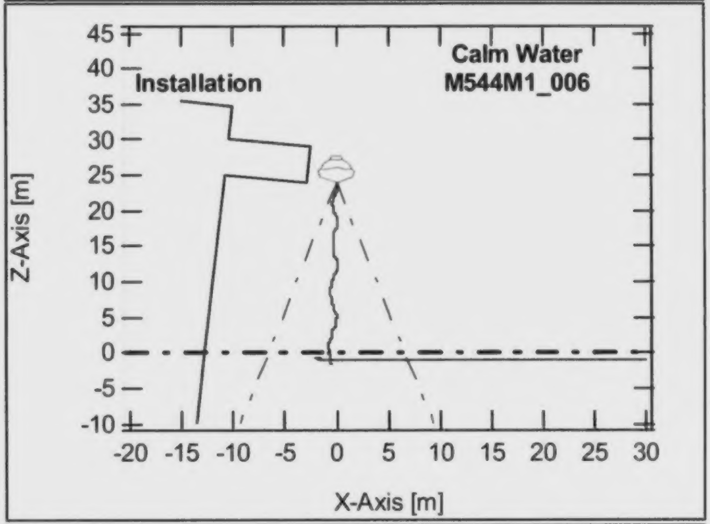
X-Axis [m]


Calm Water
M544M1_006
Installation
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Z-Axis [m]
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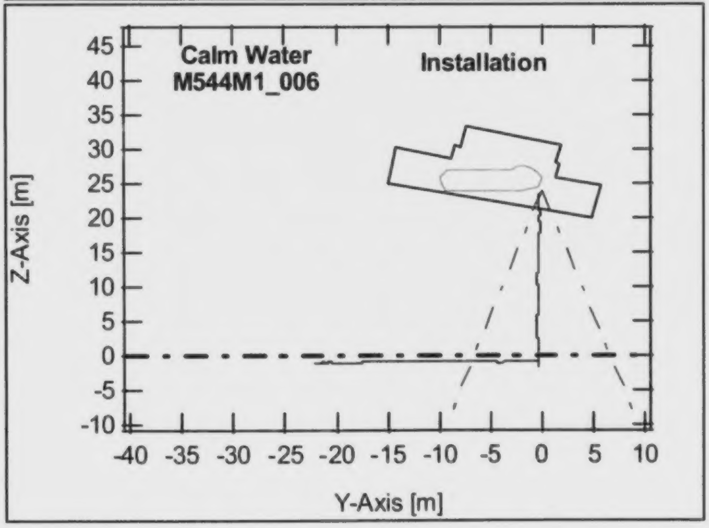
X-Axis [m]


Calm Water
M544M1_006
Installation
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Z-Axis [m]
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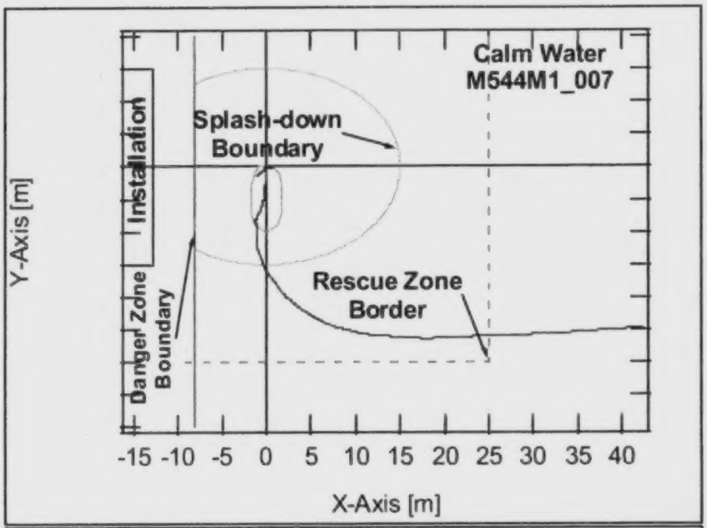
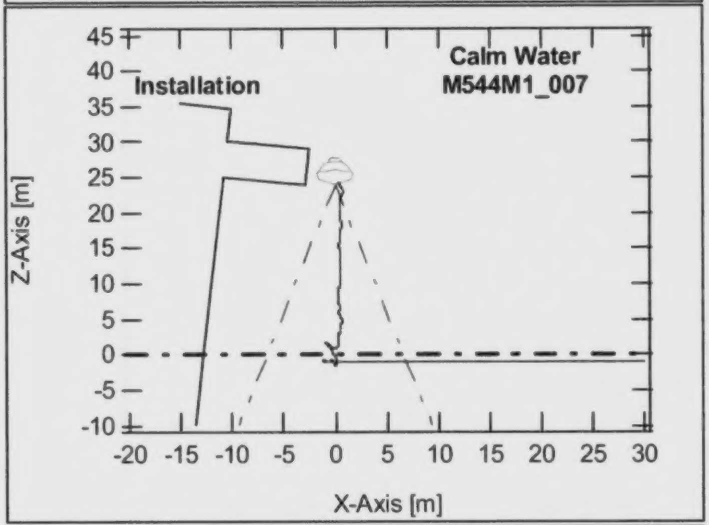
Y-Axis [m]


Calm Water
M544M1_007
Splash-down
Boundary
Installation
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Calm Water
M544M1_007
Installation
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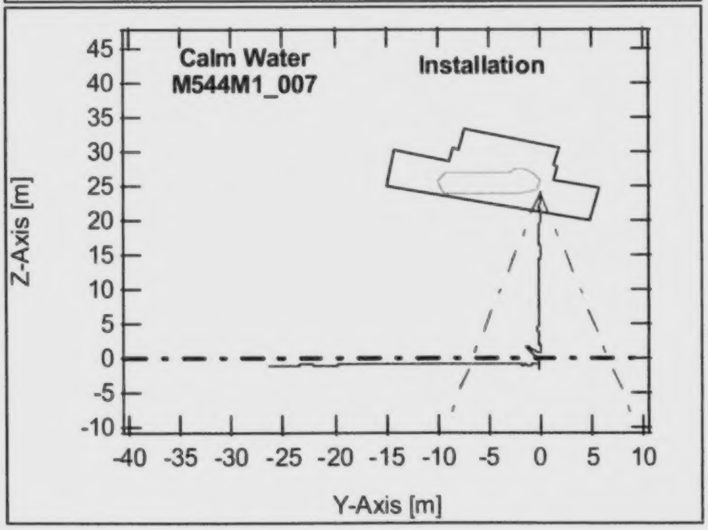
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544M1_007
Installation
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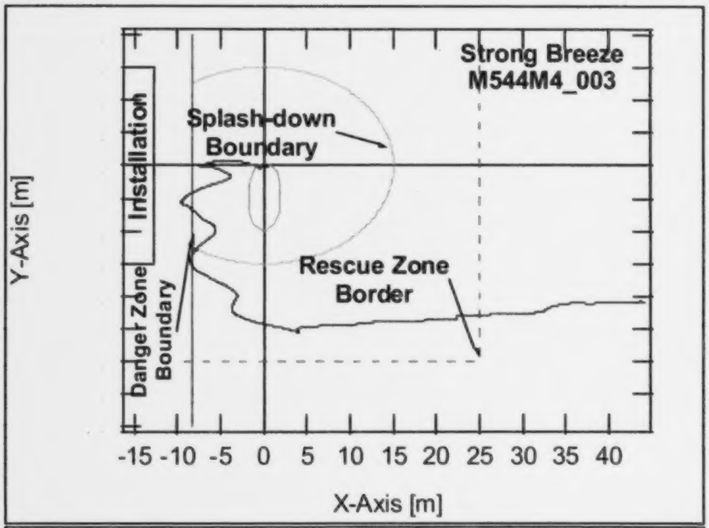
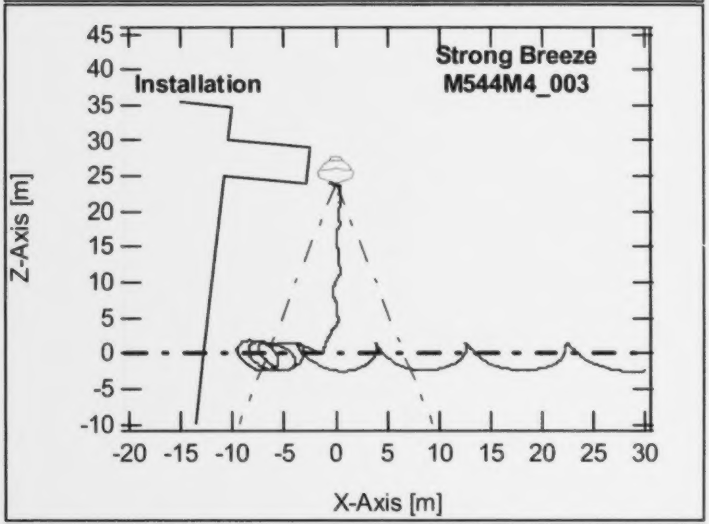
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Strong Breeze
M544M4_003
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Strong Breeze
M544M4_003
Installation
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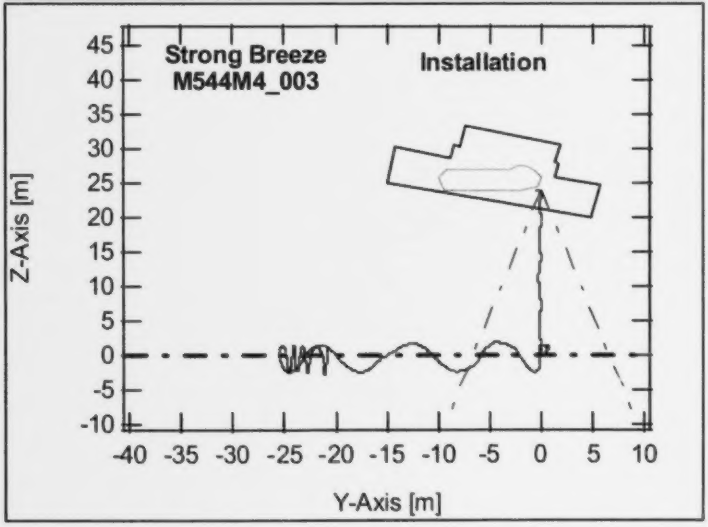
-5
-10
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544M4_003
Installation
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-5
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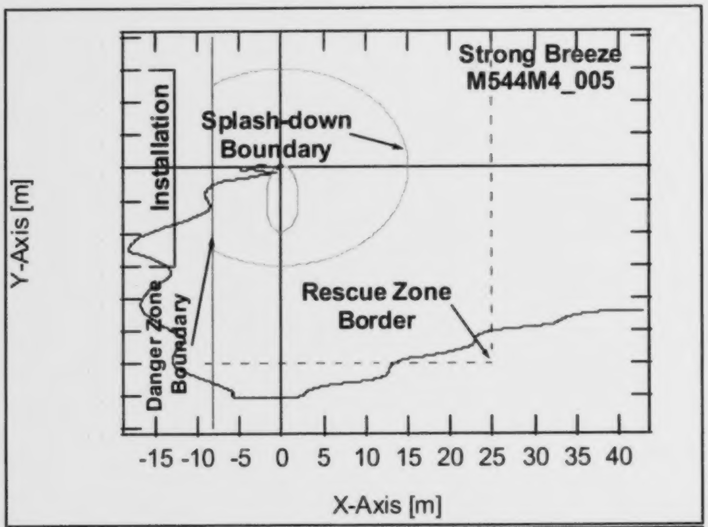
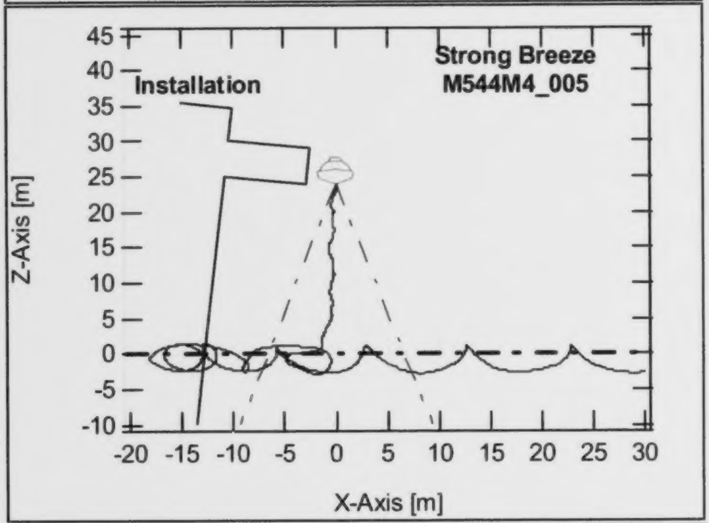
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Strong Breeze
M544M4_005
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Strong Breeze
M544M4_005
Installation
Z-Axis [m]
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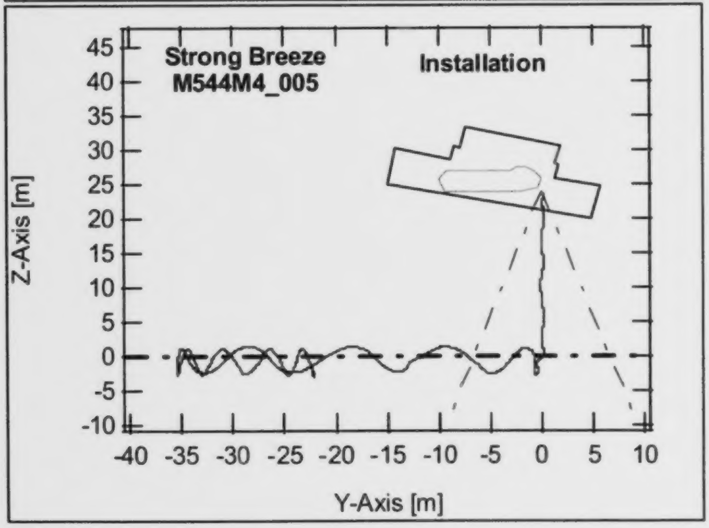
-5
-10
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544M4_005
Installation
Z-Axis [m]
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-10
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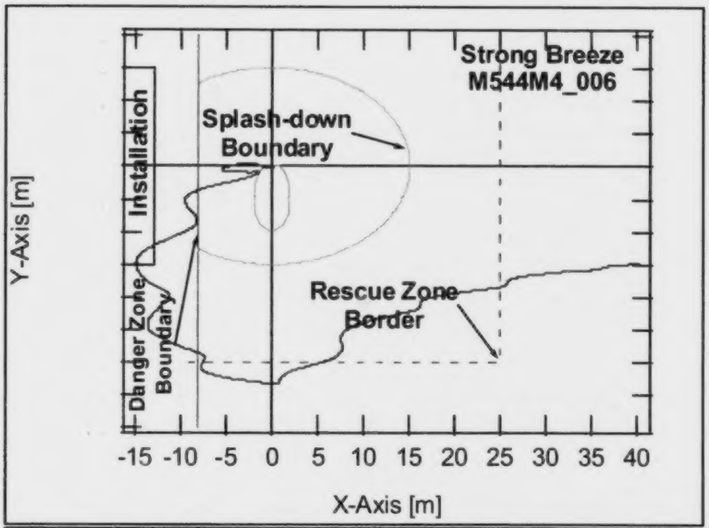
Y-Axis [m]


Strong Breeze
M544M4_006
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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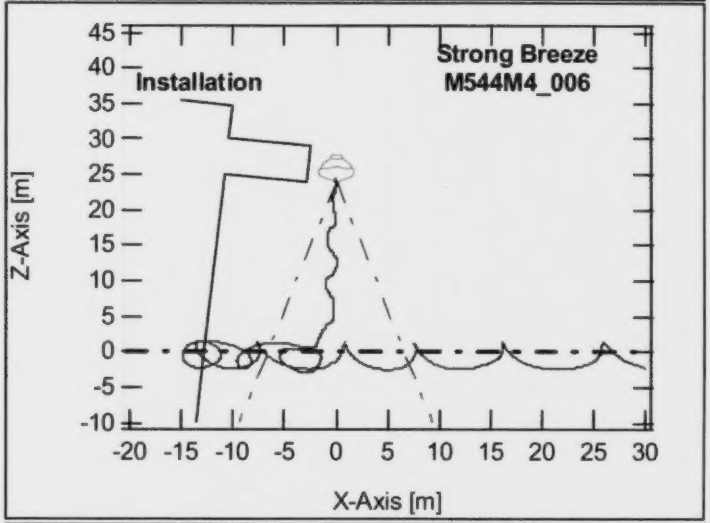
X-Axis [m]


Strong Breeze
M544M4_006
Installation
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Z-Axis [m]
-20
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25
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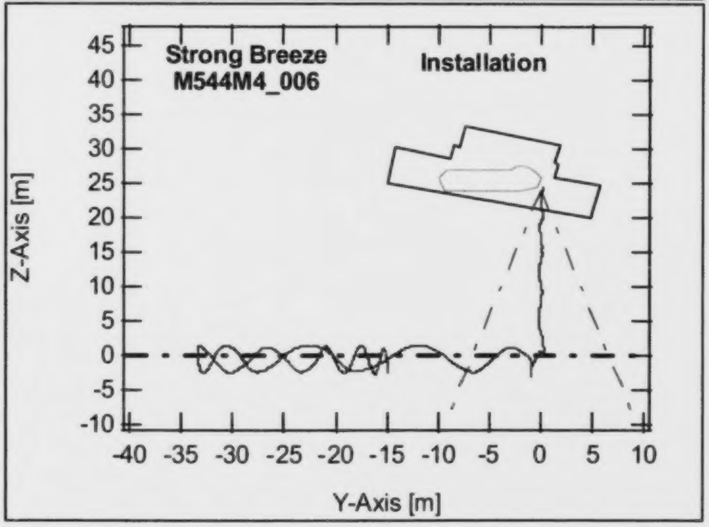
X-Axis [m]


Strong Breeze
M544M4_006
Installation
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0
-5
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Z-Axis [m]
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-25
-20
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-10
-5
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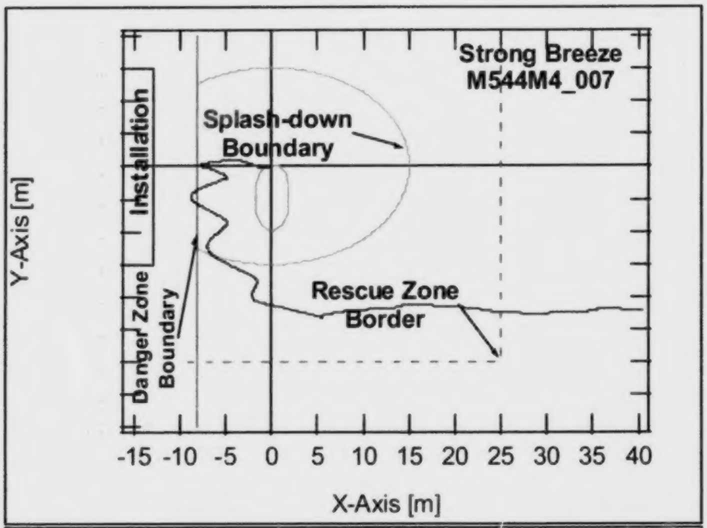
5
10
Y-Axis [m]


Strong Breeze
M544M4_007
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
-15
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-5
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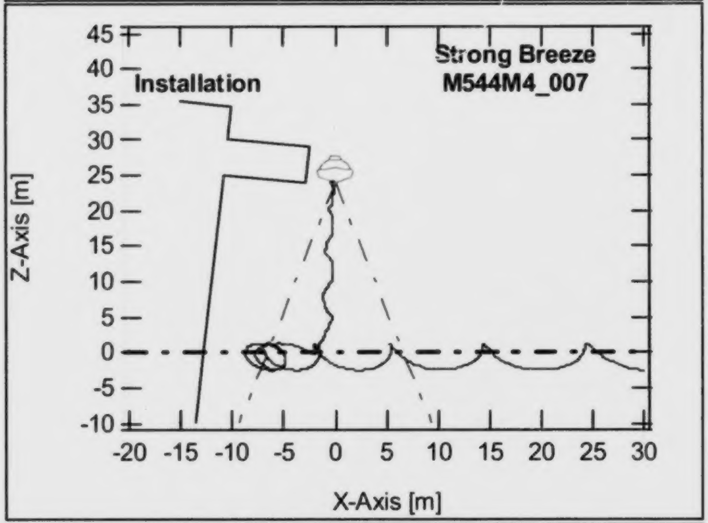
20
25
30
35
40
X-Axis [m]


Strong Breeze
M544M4_007
Installation
Z-Axis [m]
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25
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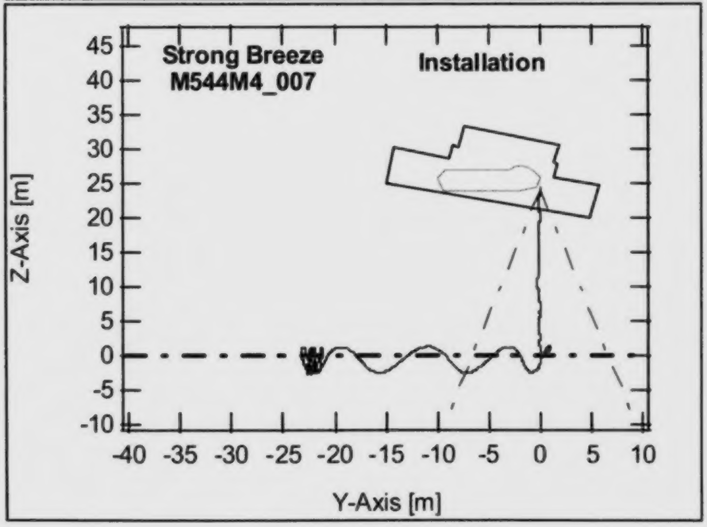
15
20
25
30
X-Axis [m]


Strong Breeze
M544M4_007
Installation
Z-Axis [m]
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40
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25
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15
10
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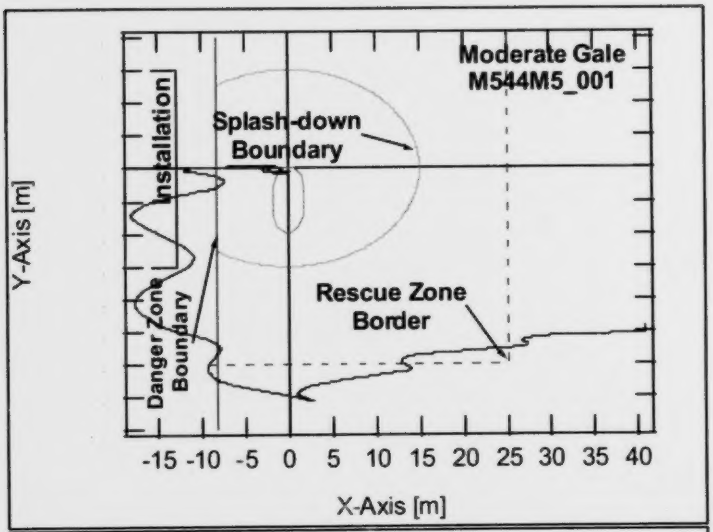
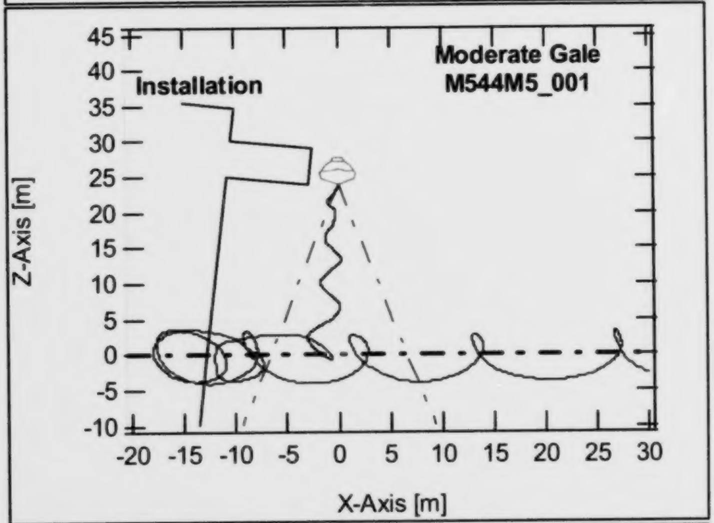
-35
-30
-25
-20
-15
-10
-5
0
5
10
Y-Axis [m]


Moderate Gale
M544M5_001
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Moderate Gale
M544M5_001
Installation
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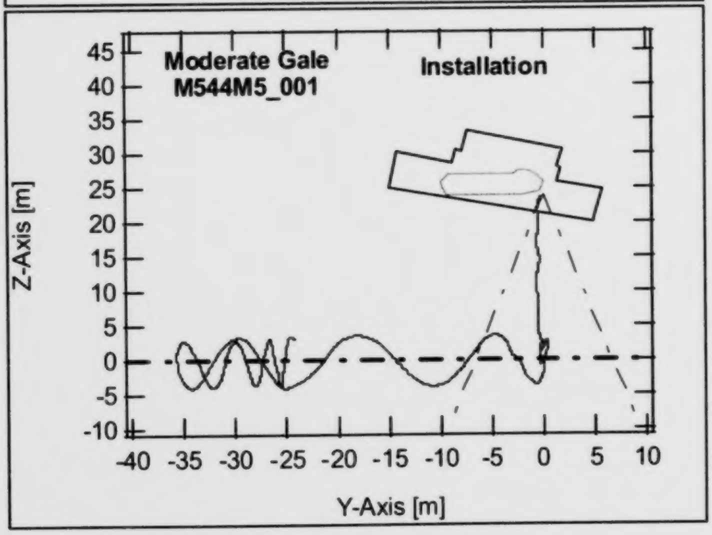
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544M5_001
Installation
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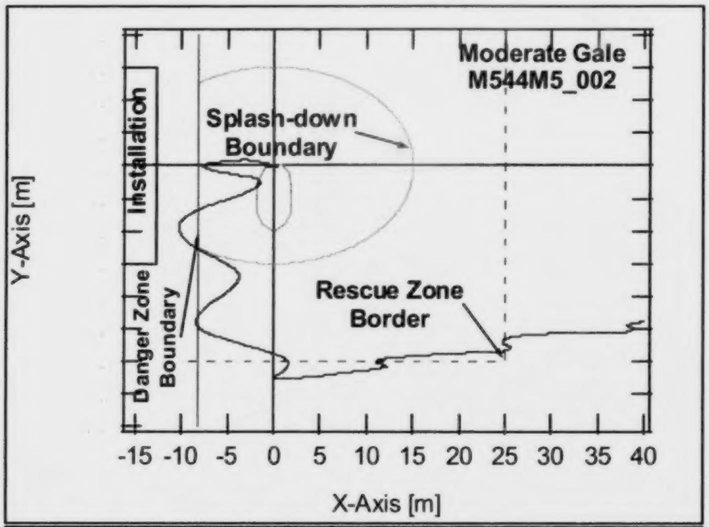
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Gale
M544M5_002
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
-15
-10
-5
0
5
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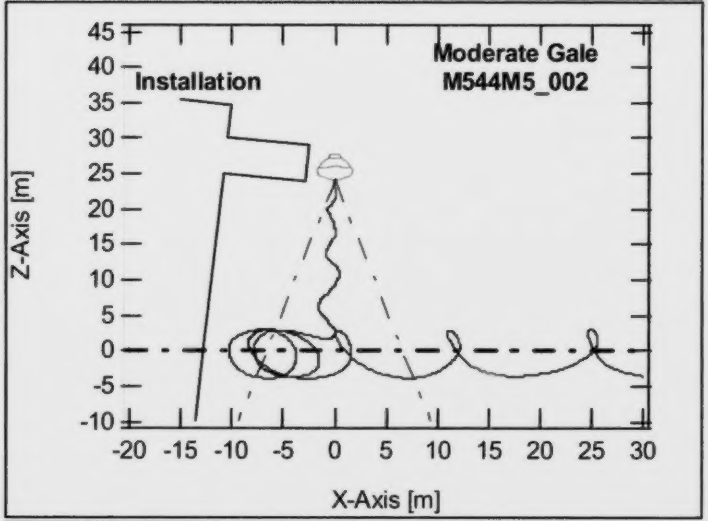
25
30
35
40


Moderate Gale
M544M5_002
Installation
Z-Axis [m]
X-Axis [m]
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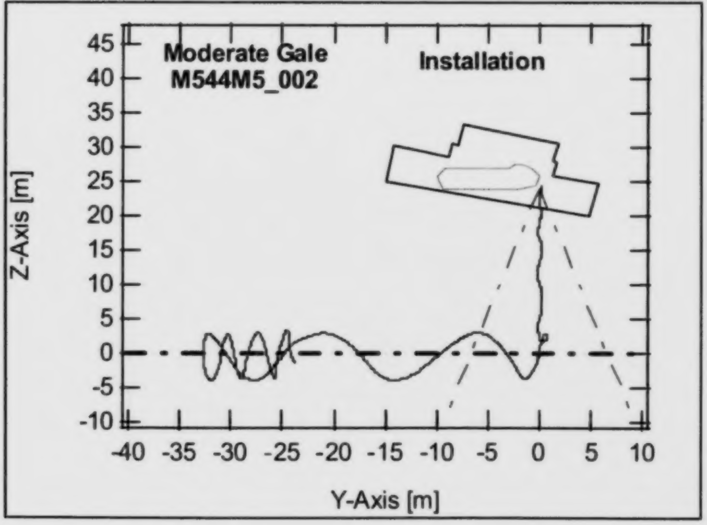
Moderate Gale
M544M5_002
Installation
Z-Axis [m]
Y-Axis [m]
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-5
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5
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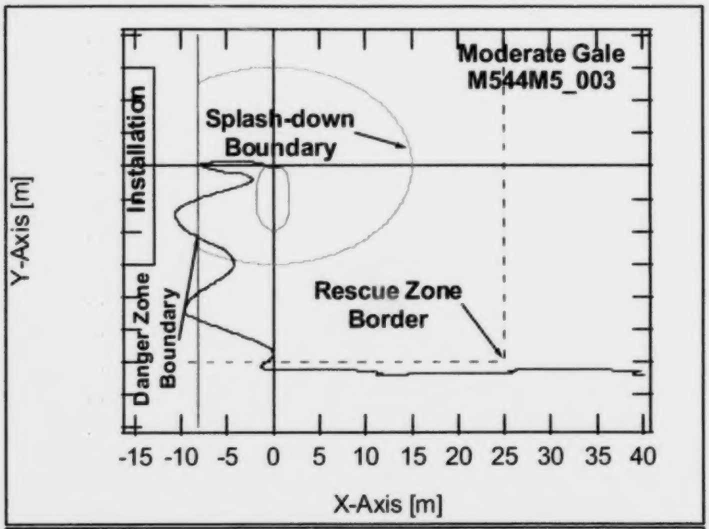
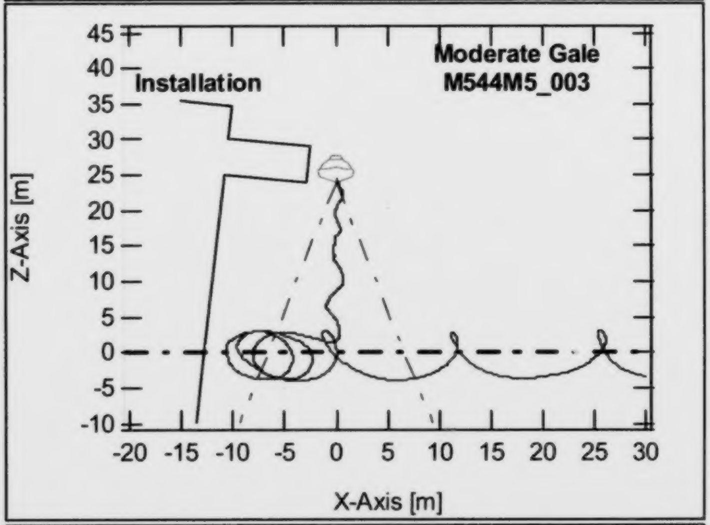
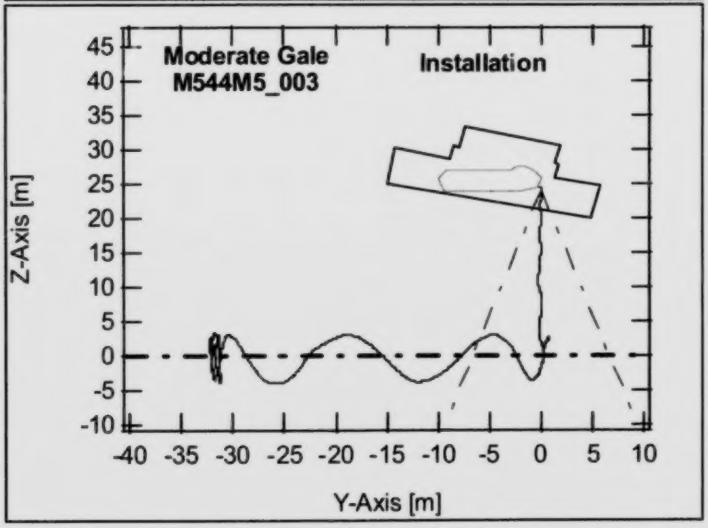

Moderate Gale
M544M5_003
Installation
Splash-down Boundary
Rescue Zone Border
Danger Zone Boundary
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Moderate Gale
M544M5_003
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544M5_003
Installation
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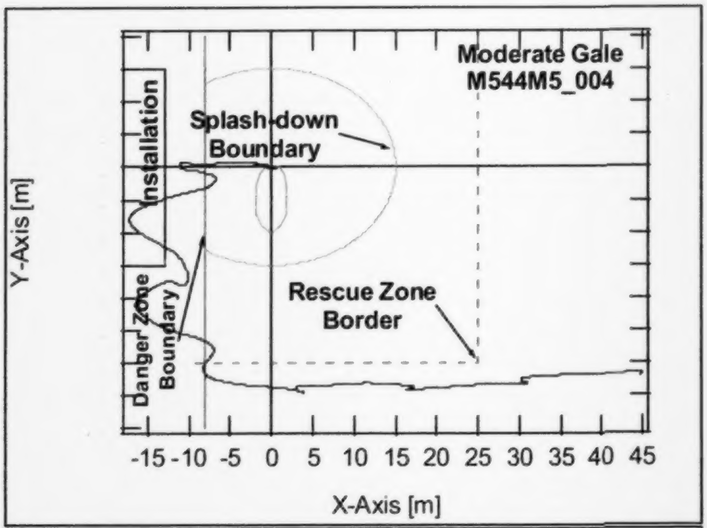
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Gale
M544M5_004
Installation
Splash-down
Boundary
Rescue Zone
Border
Danger Zone
Boundary
Y-Axis [m]
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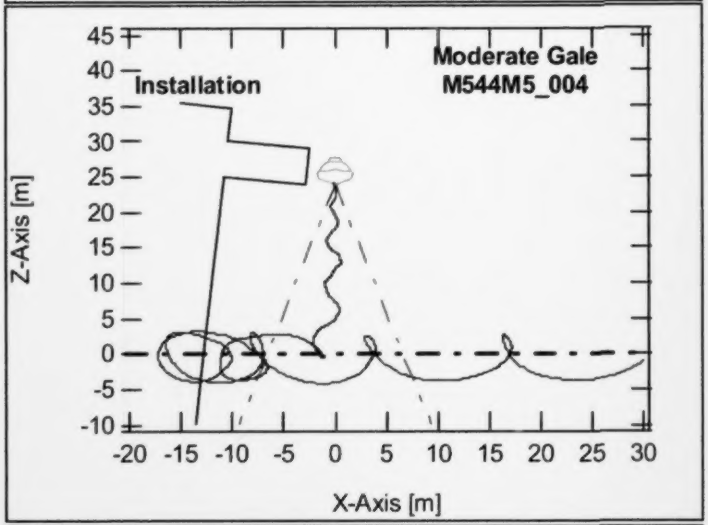
X-Axis [m]


Moderate Gale
M544M5_004
Installation
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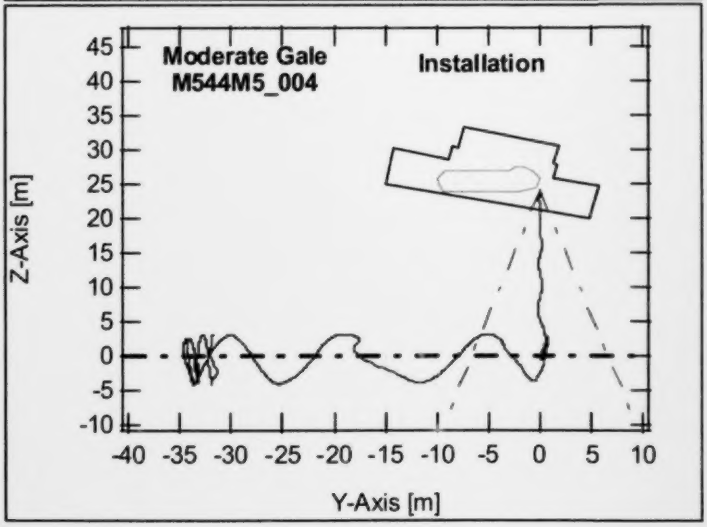
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544M5_004
Installation
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Z-Axis [m]
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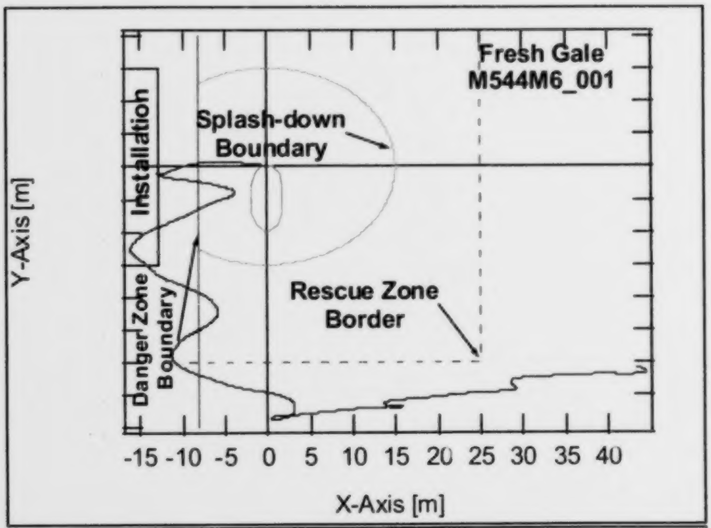
Y-Axis [m]


Fresh Gale
M544M6_001
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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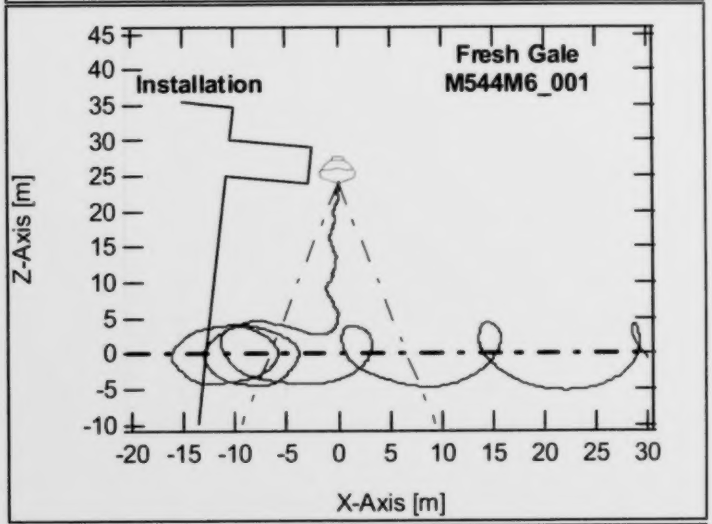
X-Axis [m]


Installation
Fresh Gale
M544M6_001
45
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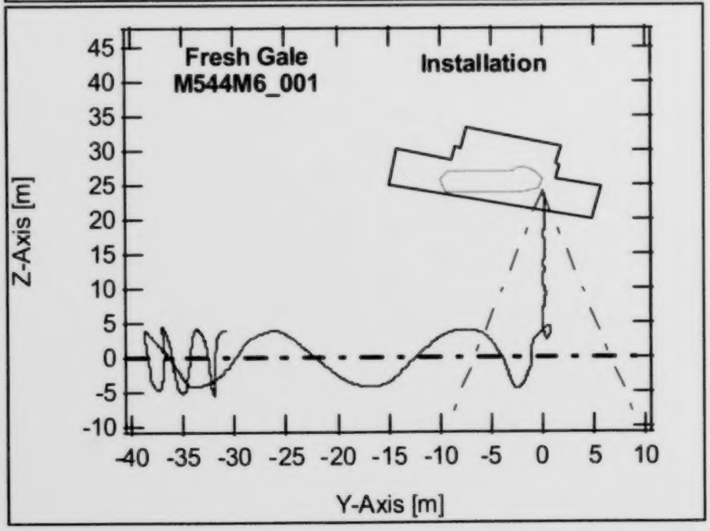
0
-5
-10
Z-Axis [m]
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Fresh Gale
M544M6_001
Installation
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Z-Axis [m]
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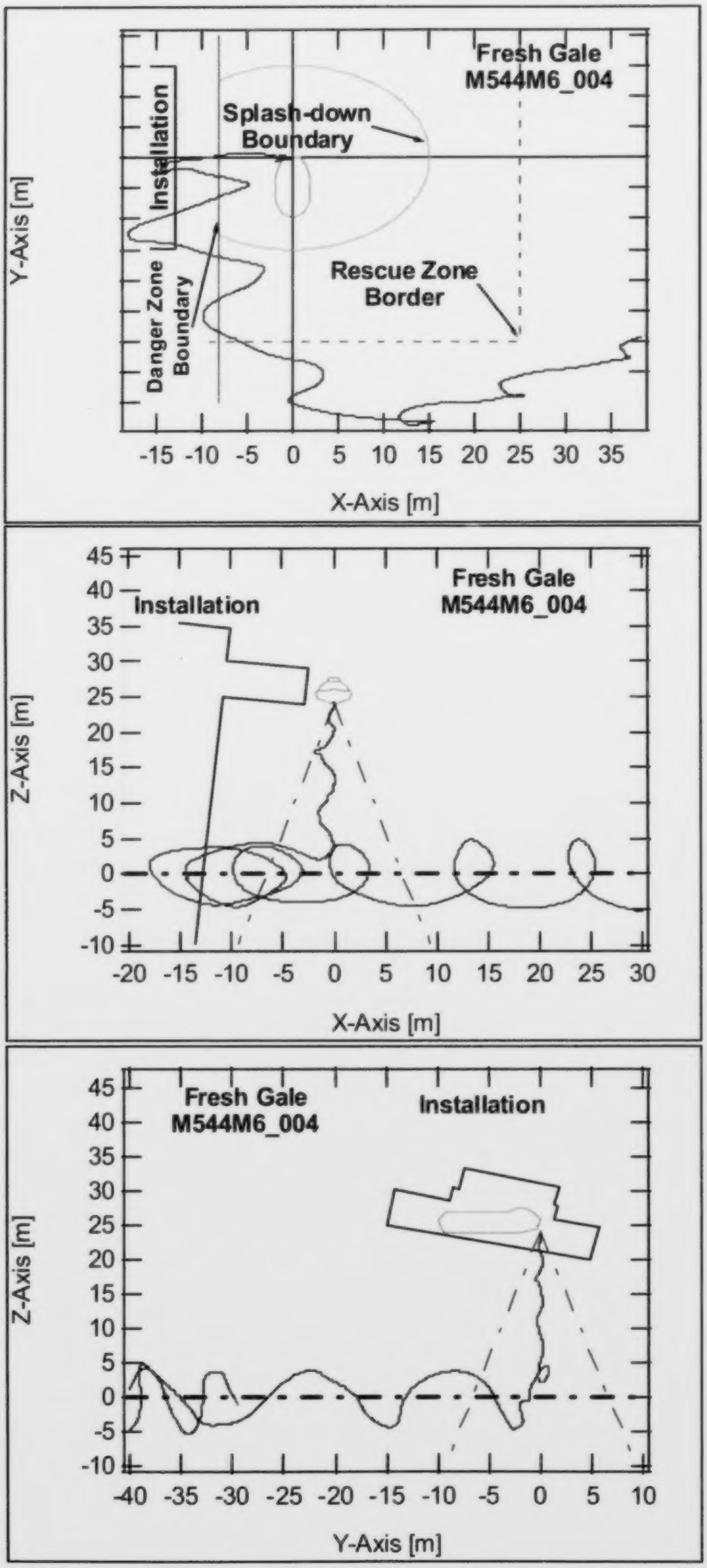
Y-Axis [m]


Fresh Gale
M544M6_004
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
X-Axis [m]
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Fresh Gale
M544M6_004
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-20 -15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]
Fresh Gale
M544M6_004
Installation
Z-Axis [m]
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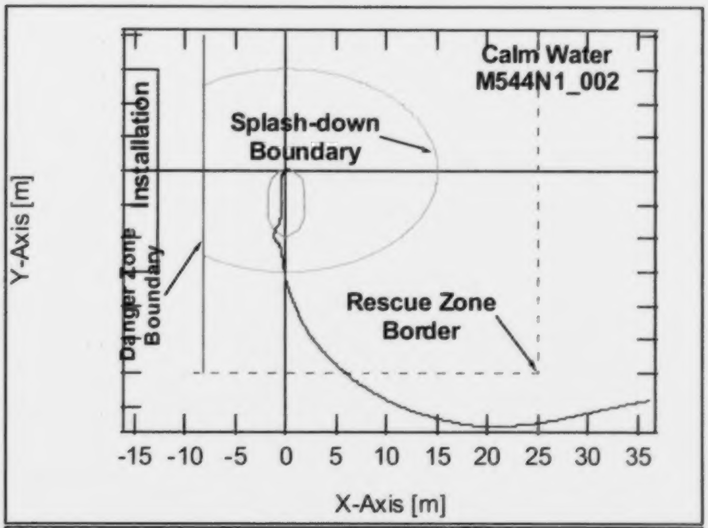
Y-Axis [m]


Calm Water
M544N1_002
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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-10
-5
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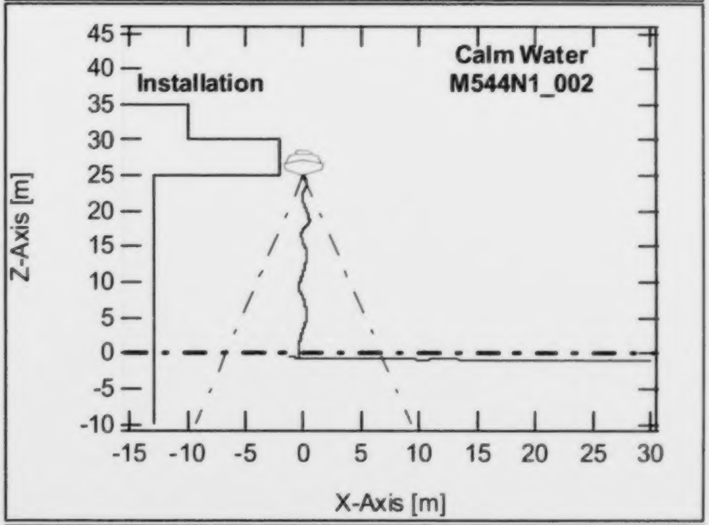
20
25
30
35
X-Axis [m]


Calm Water
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Installation
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Z-Axis [m]
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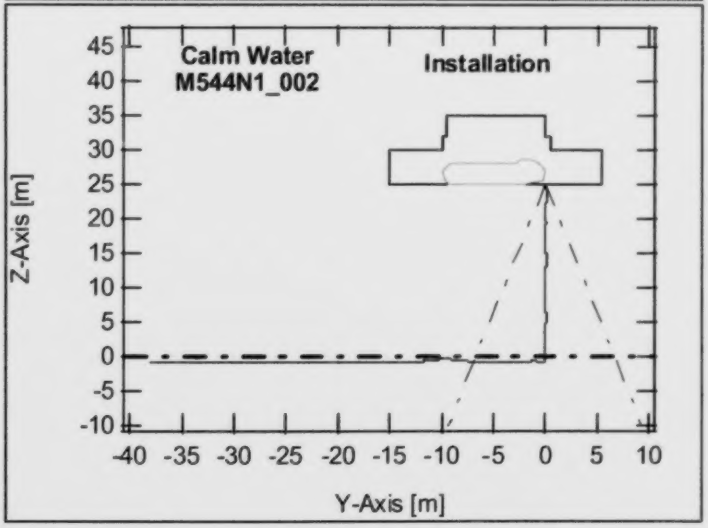
X-Axis [m]


Calm Water
M544N1_002
Installation
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Z-Axis [m]
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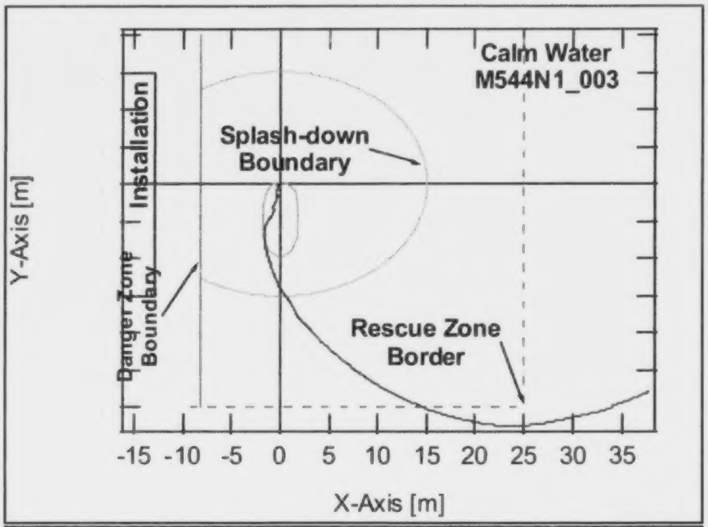
Y-Axis [m]


Calm Water
M544N1_003
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
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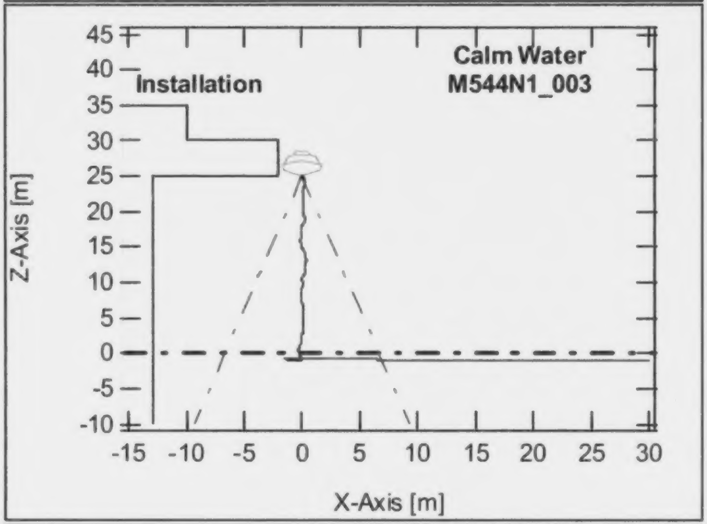
X-Axis [m]


Installation
Calm Water
M544N1_003
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Z-Axis [m]
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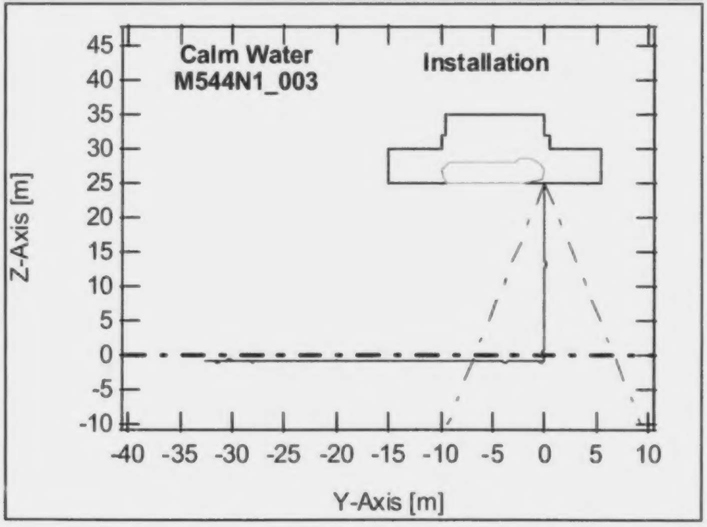
30
X-Axis [m]


Calm Water
M544N1_003
Installation
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-5
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Z-Axis [m]
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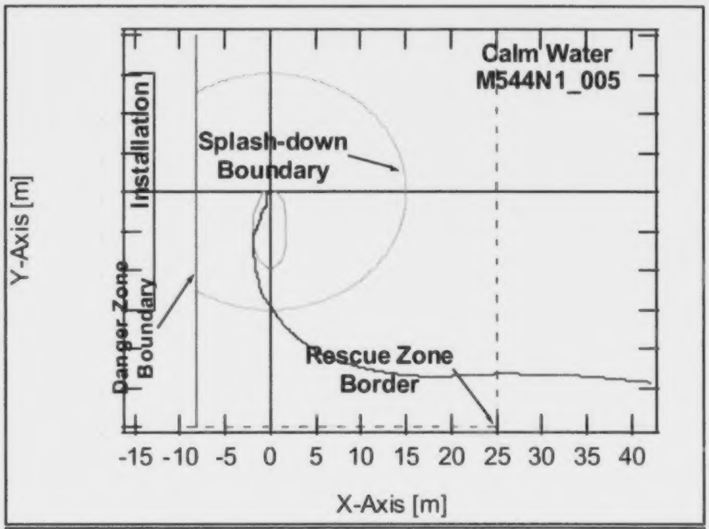
Y-Axis [m]


Calm Water
M544N1_005
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
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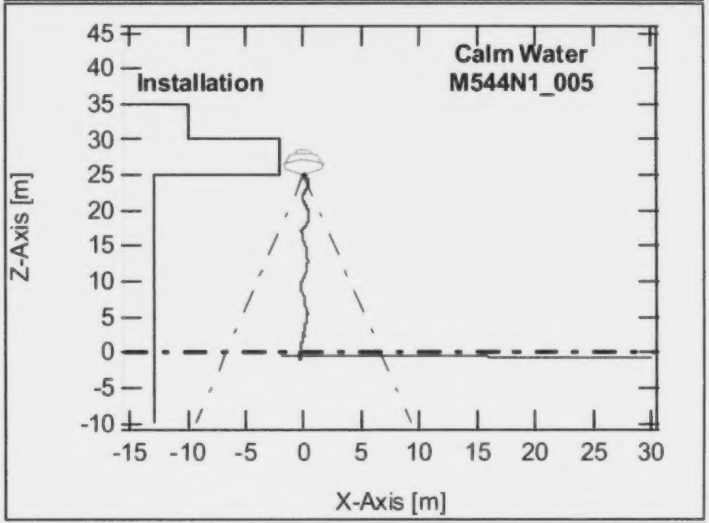
X-Axis [m]


Calm Water
M544N1_005
Installation
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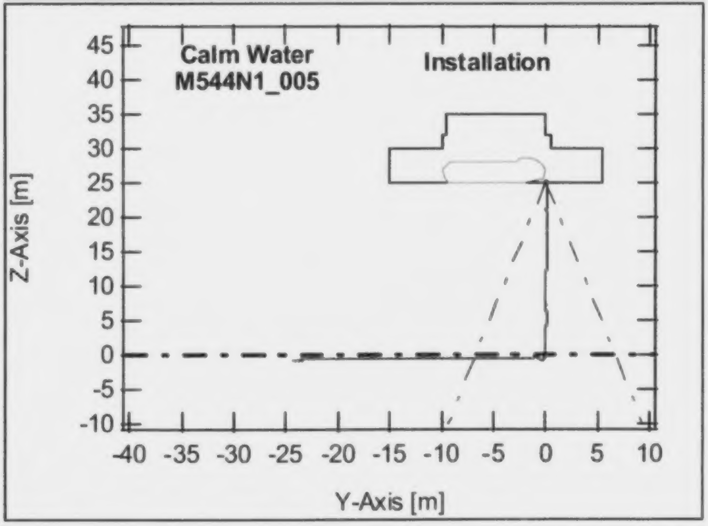
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544N1_005
Installation
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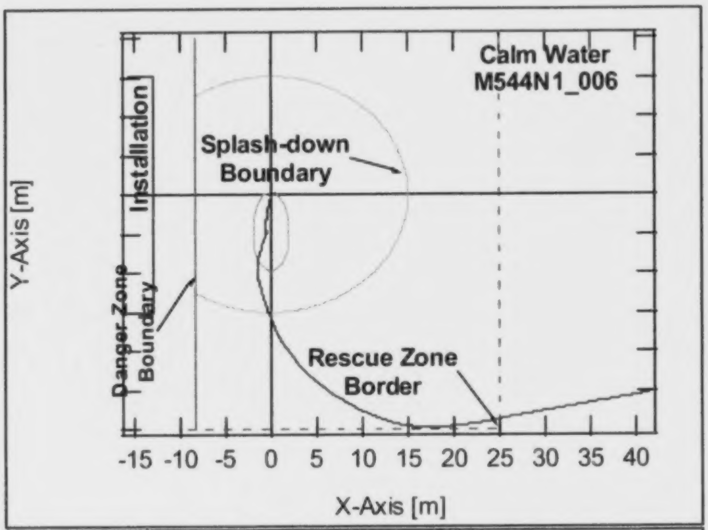
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544N1_006
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
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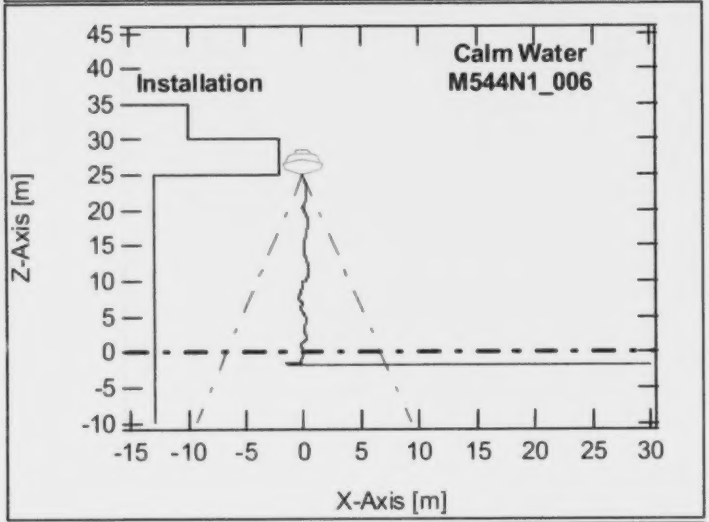
X-Axis [m]


Calm Water
M544N1_006
Installation
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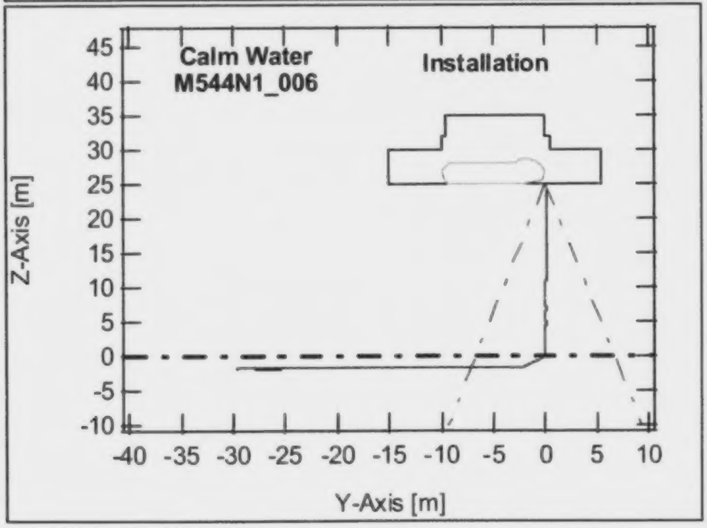
0
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Calm Water
M544N1_006
Installation
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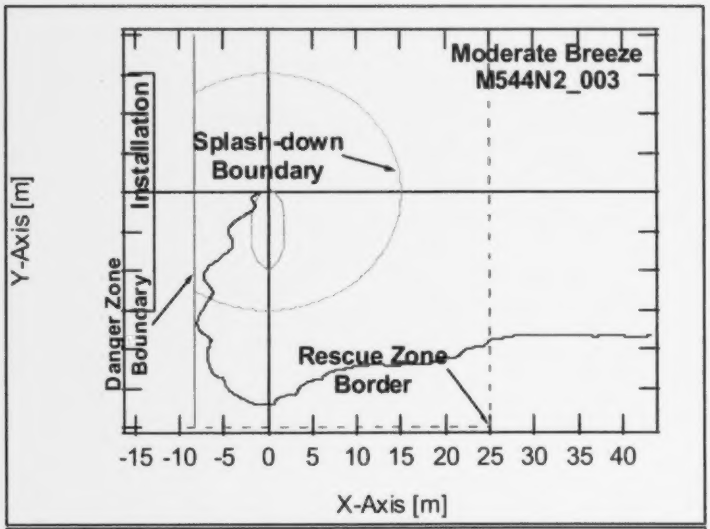
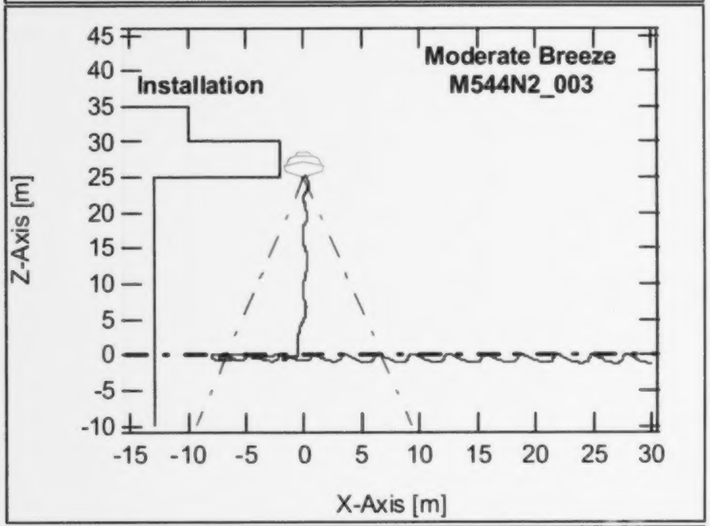
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Breeze
M544N2_003
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Moderate Breeze
M544N2_003
Installation
45
40
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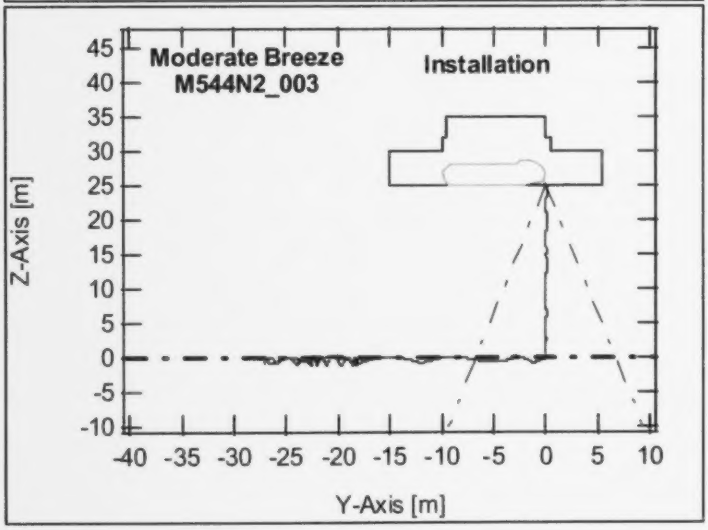
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Breeze
M544N2_003
Installation
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-5
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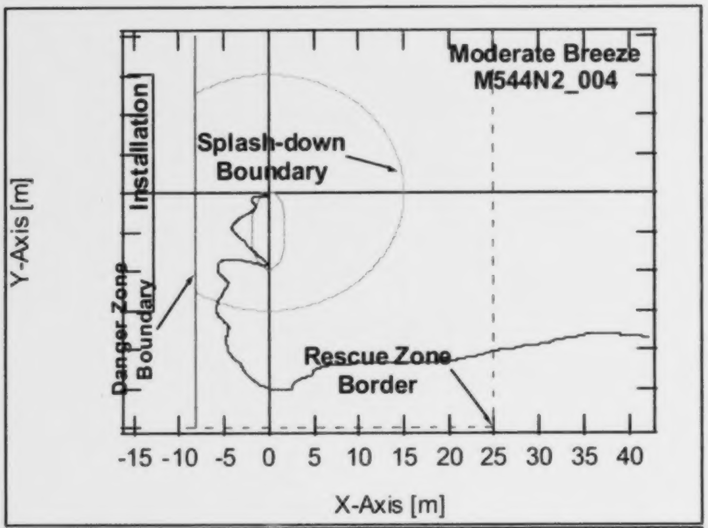
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Moderate Breeze
M544N2_004
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
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-5
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15
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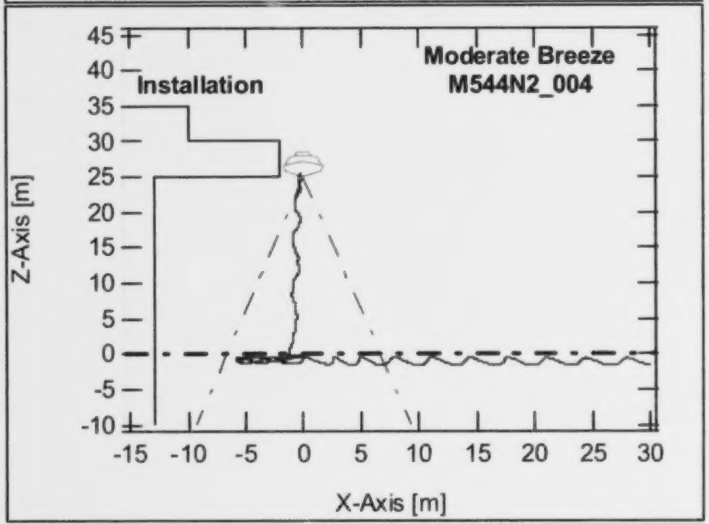
25
30
35
40
X-Axis [m]


Moderate Breeze
M544N2_004
Installation
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Z-Axis [m]
-15
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-5
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10
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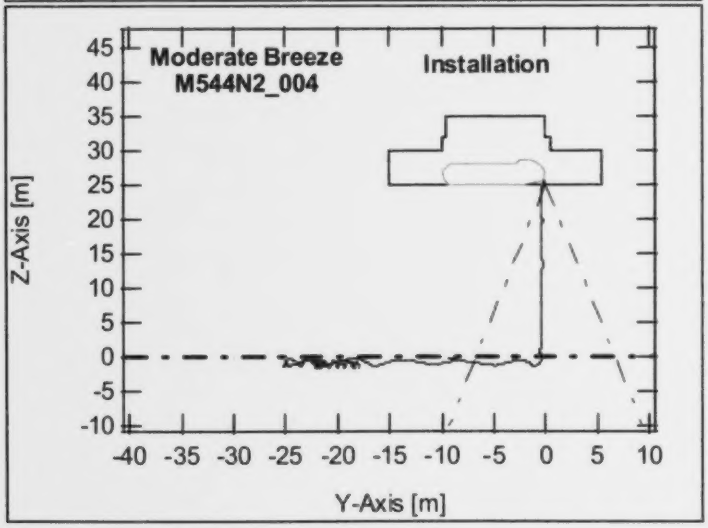
20
25
30
X-Axis [m]


Moderate Breeze
M544N2_004
Installation
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0
-5
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Z-Axis [m]
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-30
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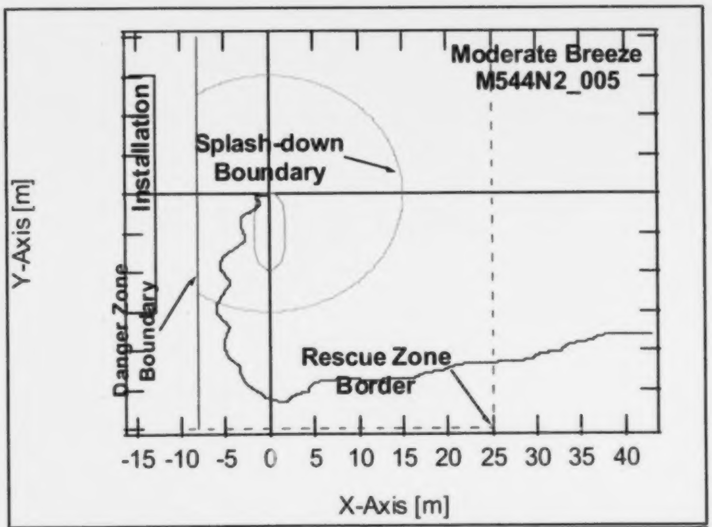
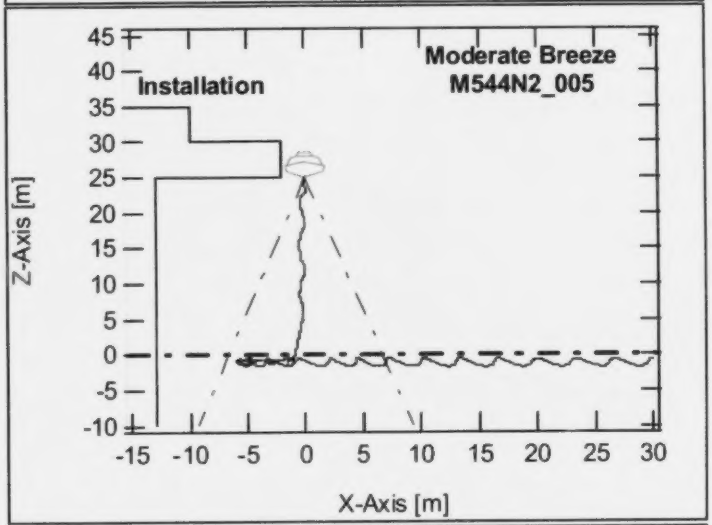
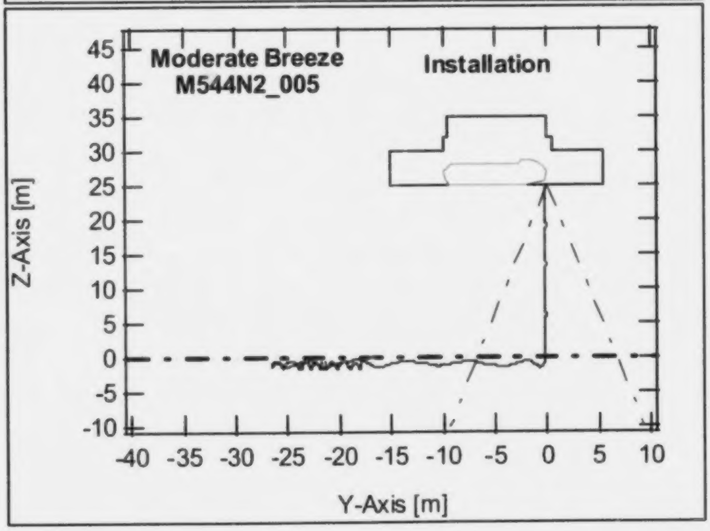
Y-Axis [m]


Moderate Breeze
M544N2_005
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Moderate Breeze
M544N2_005
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Breeze
M544N2_005
Installation
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Z-Axis [m]
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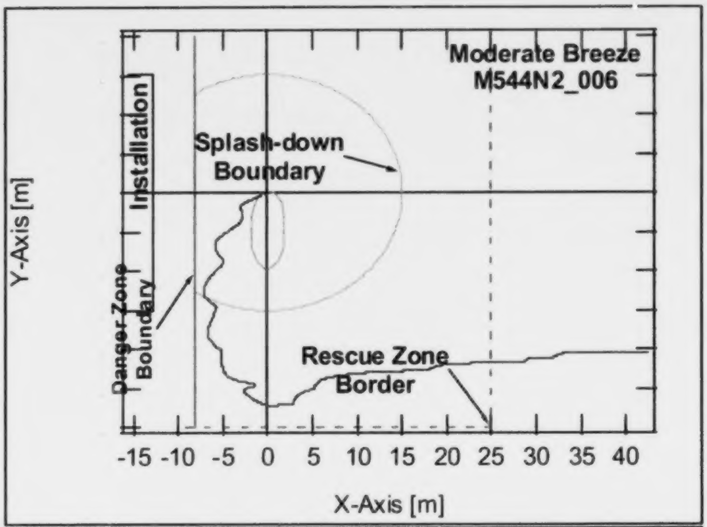
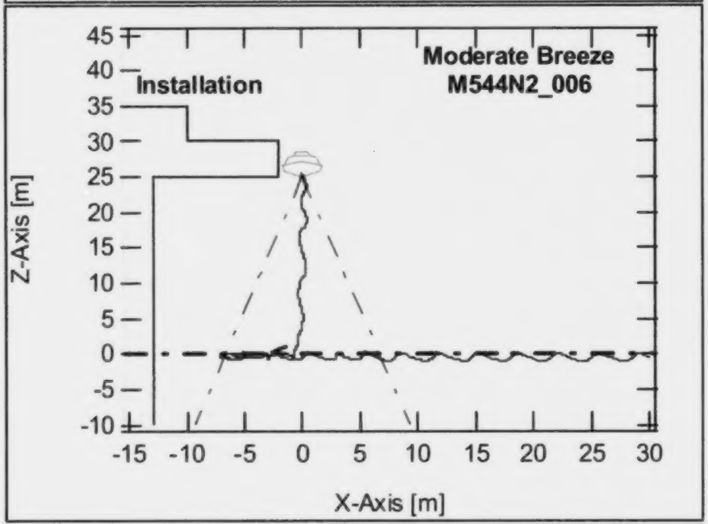
Y-Axis [m]


Moderate Breeze
M544N2_006
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Moderate Breeze
M544N2_006
Installation
Z-Axis [m]
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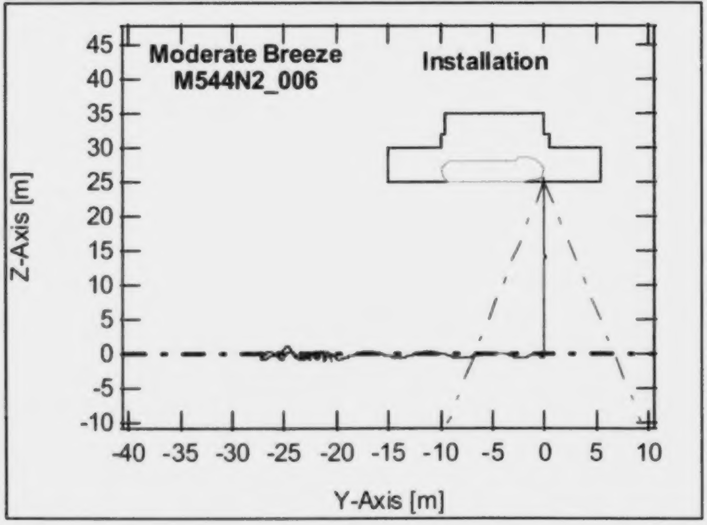
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Breeze
M544N2_006
Installation
Z-Axis [m]
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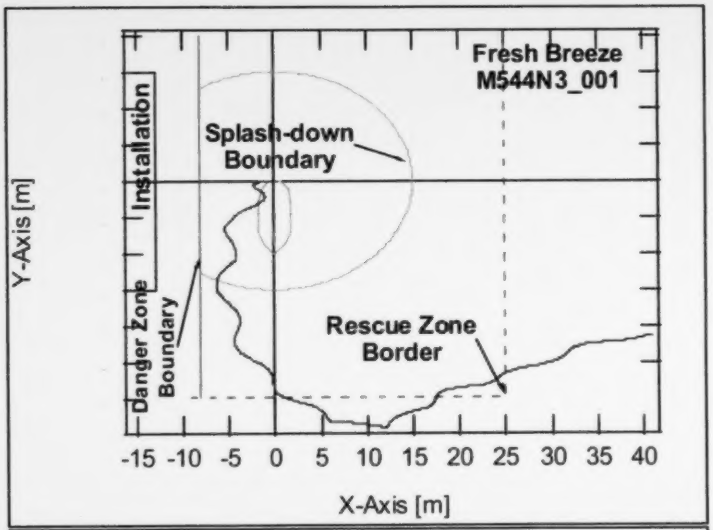
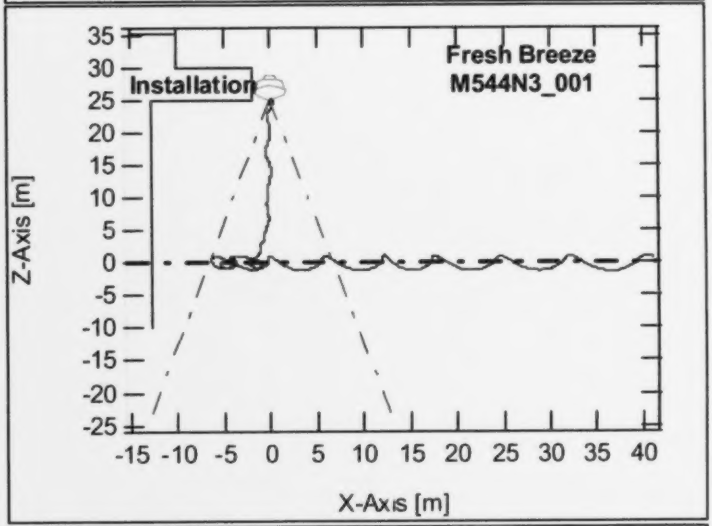
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Breeze
M544N3_001
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Fresh Breeze
M544N3_001
Installation
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20
15
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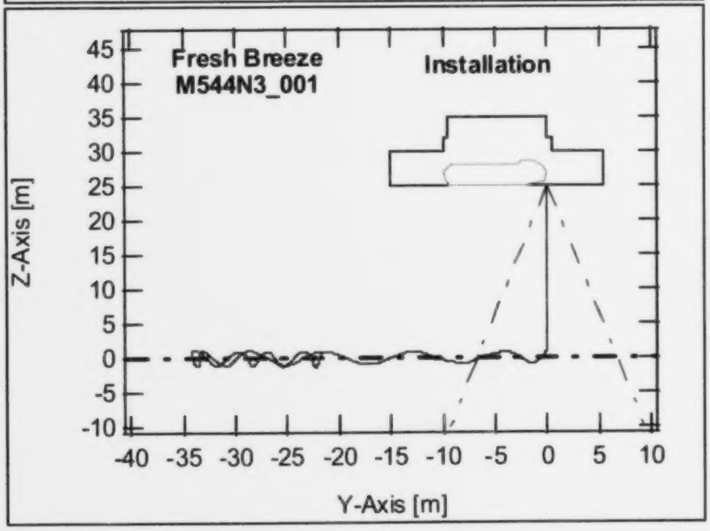
0
-5
-10
-15
-20
-25
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Fresh Breeze
M544N3_001
Installation
45
40
35
30
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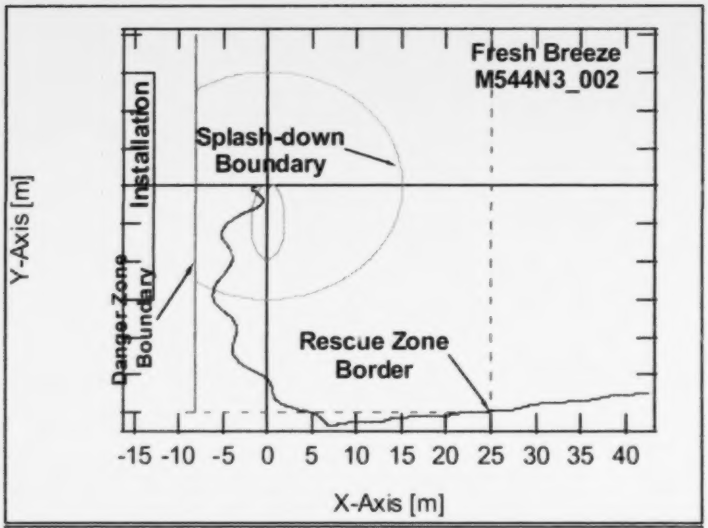
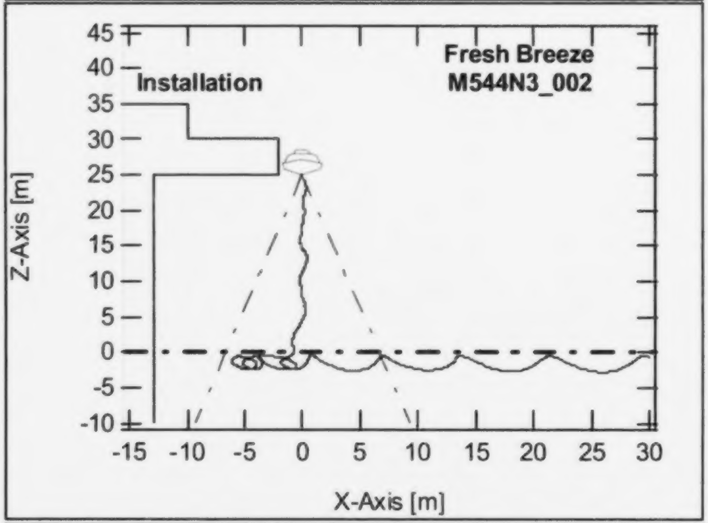
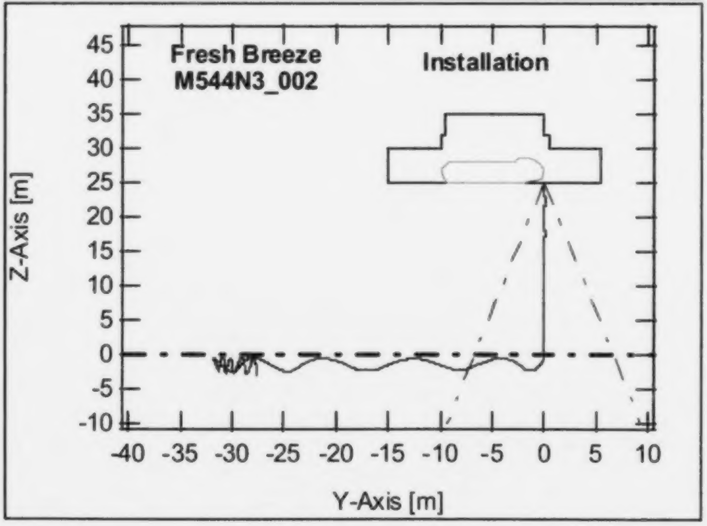
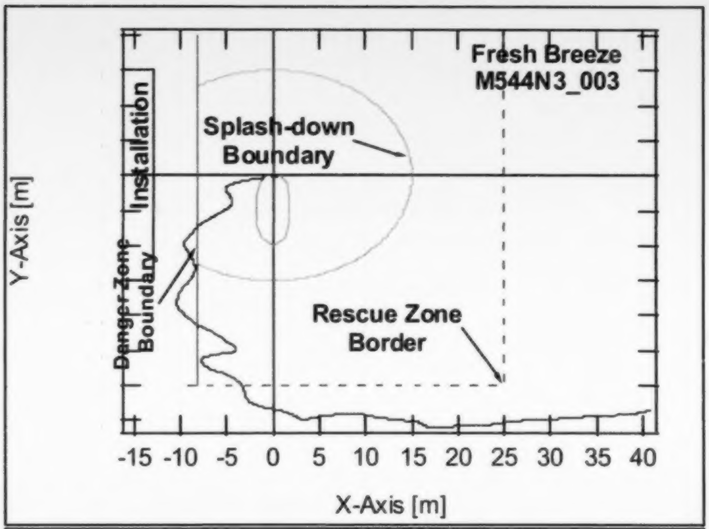
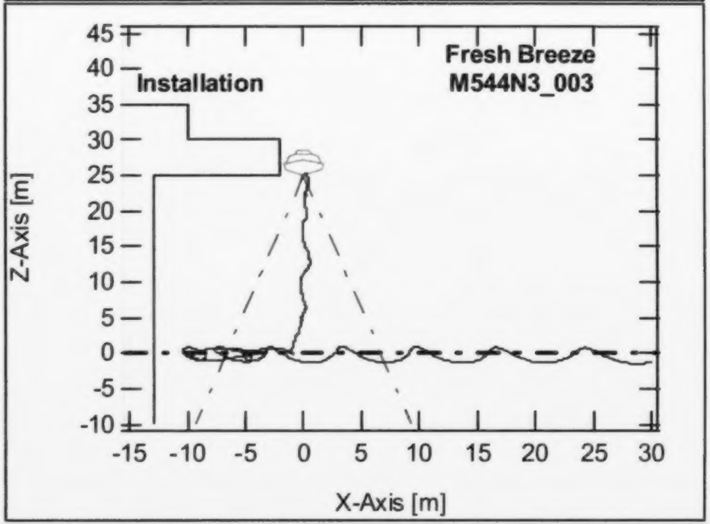
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]

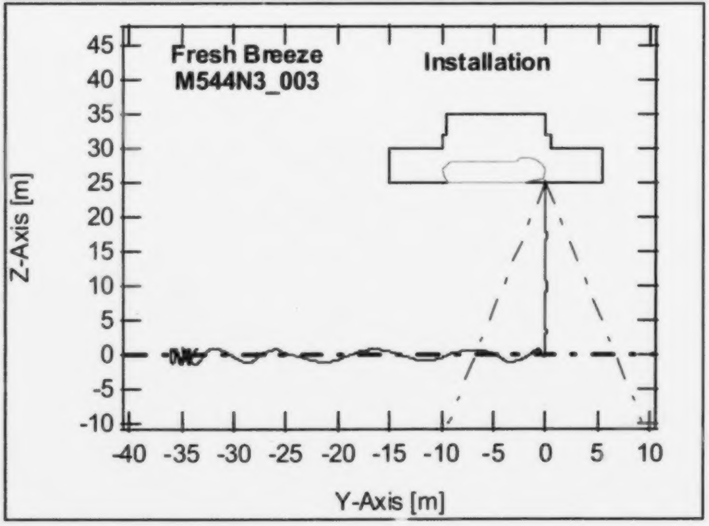

Fresh Breeze
M544N3_002
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Fresh Breeze
M544N3_002
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Fresh Breeze
M544N3_002
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Breeze
M544N3_003
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Fresh Breeze
M544N3_003
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Fresh Breeze
M544N3_003
Installation
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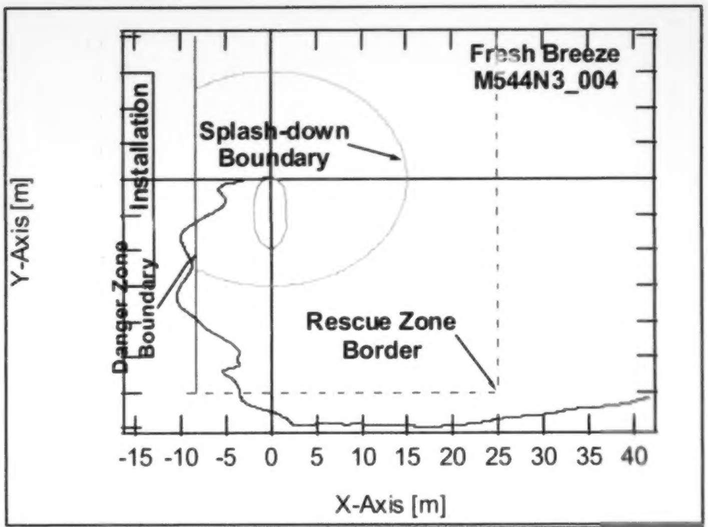
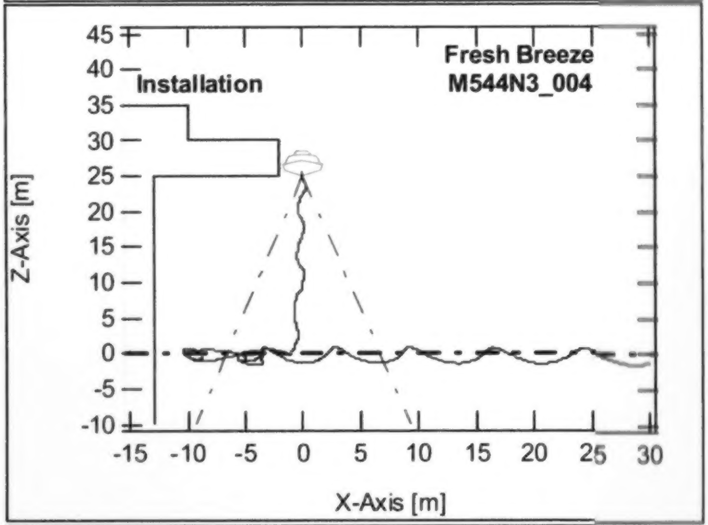
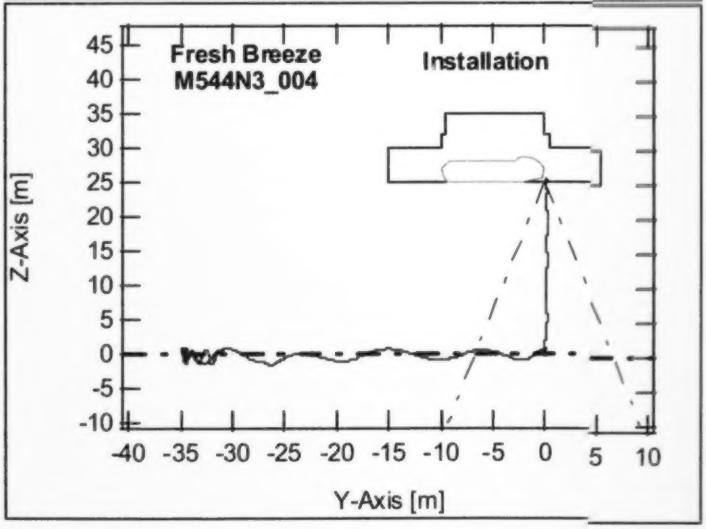
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Fresh Breeze
M544N3_004
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Fresh Breeze
M544N3_004
Installation
Z-Axis [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Fresh Breeze
M544N3_004
Installation
Z-Axis [m]
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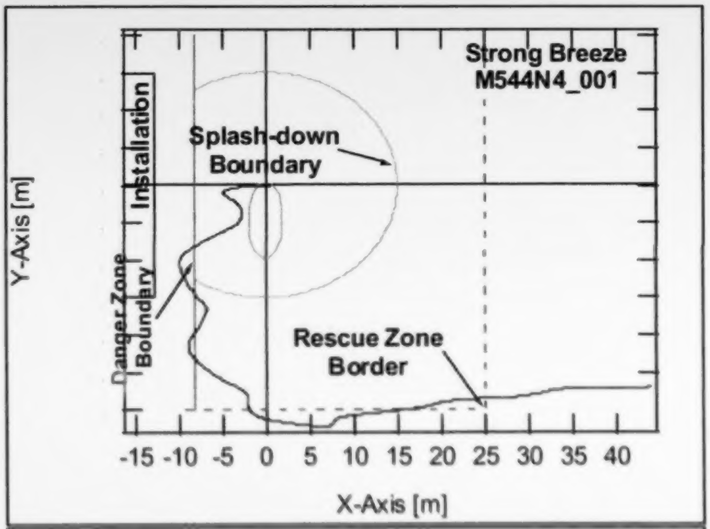
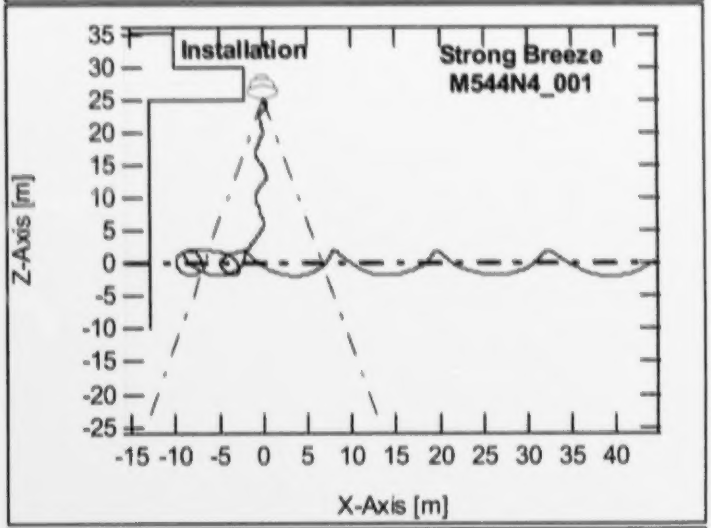
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Strong Breeze
M544N4_001
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Installation
Strong Breeze
M544N4_001
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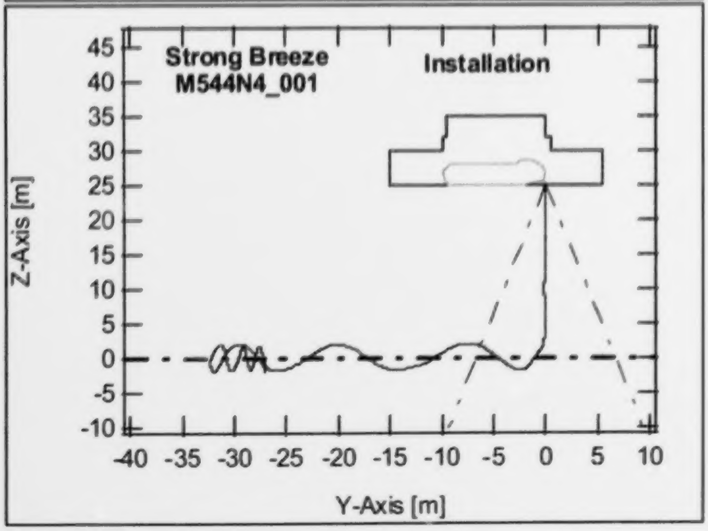
-25
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X-Axis [m]


Strong Breeze
M544N4_001
Installation
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Z-Axis [m]
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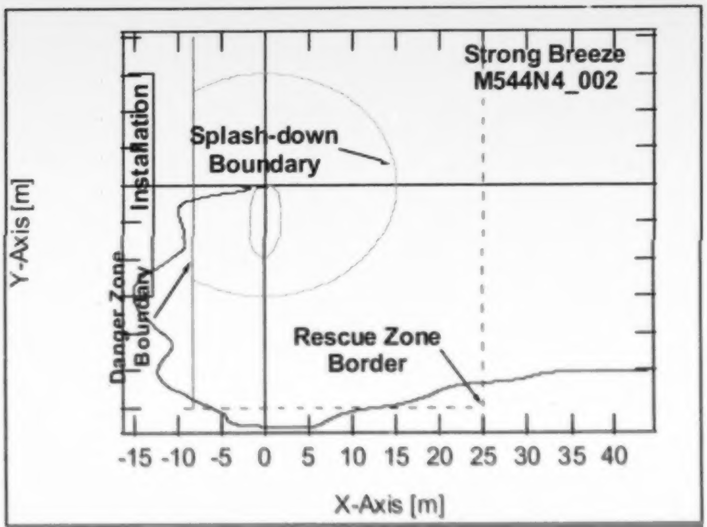
Y-Axis [m]


Strong Breeze
M544N4_002
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
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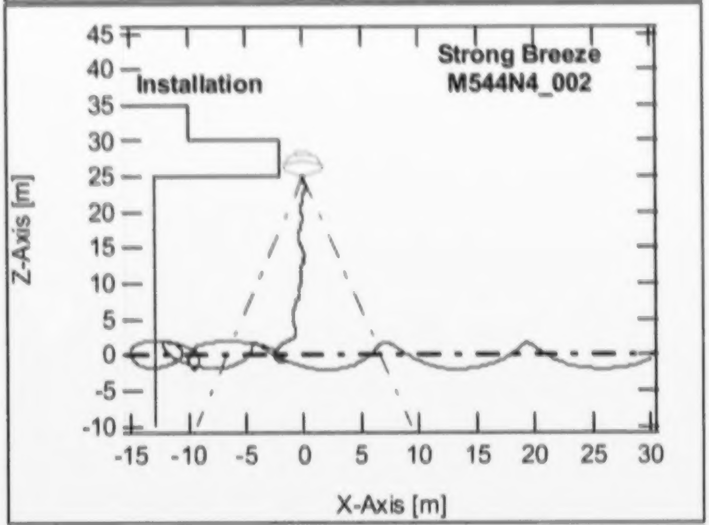
X-Axis [m]


Strong Breeze
M544N4_002
Installation
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-5
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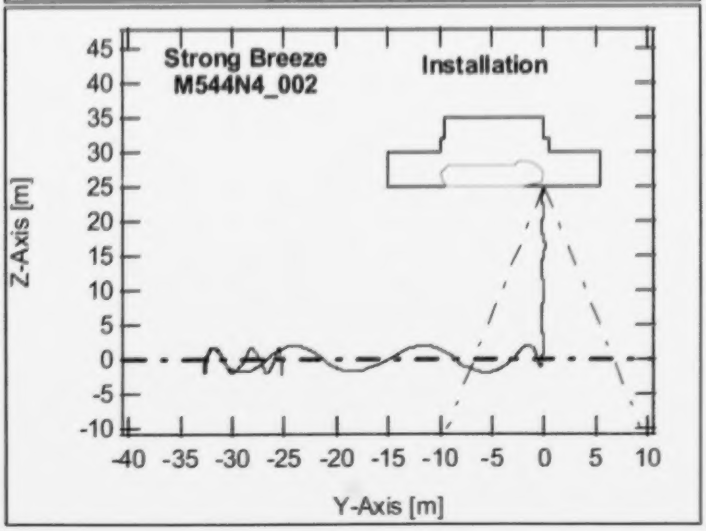
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544N4_002
Installation
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Z-Axis [m]
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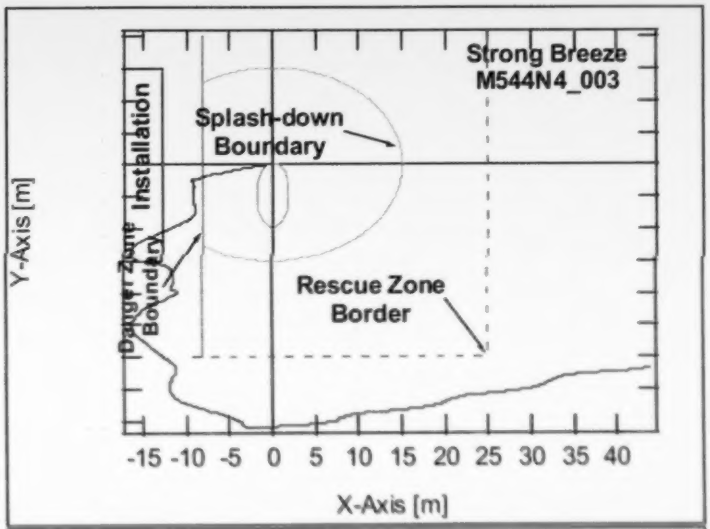
Y-Axis [m]


Strong Breeze
M544N4_003
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
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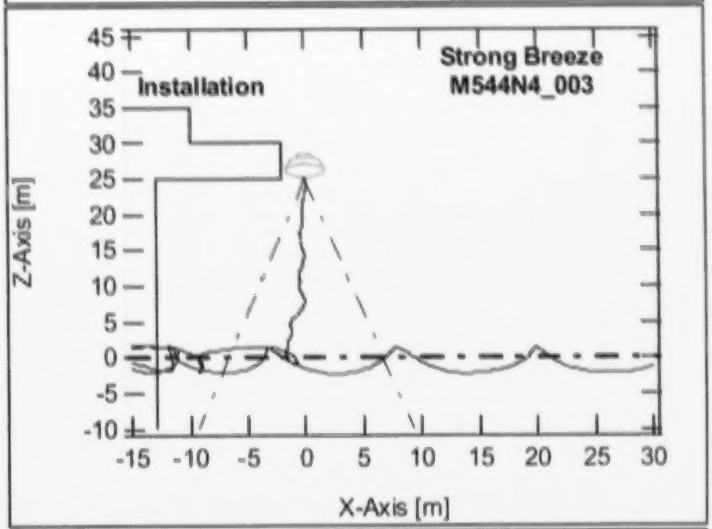
X-Axis [m]


Strong Breeze
M544N4_003
Installation
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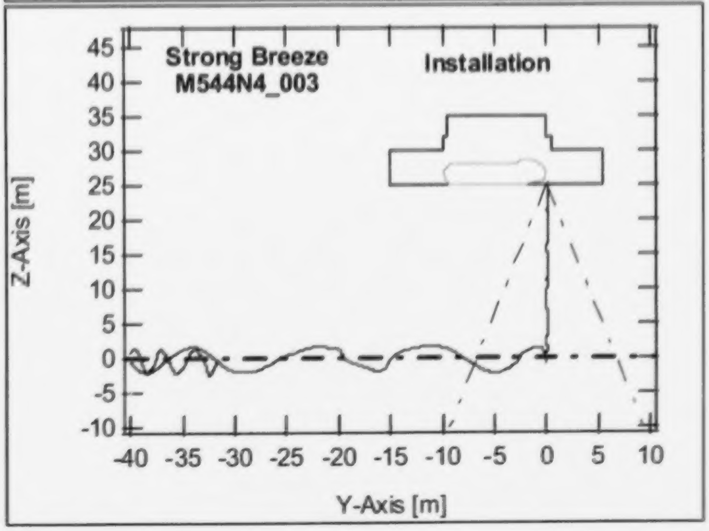
0
-5
-10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Strong Breeze
M544N4_003
Installation
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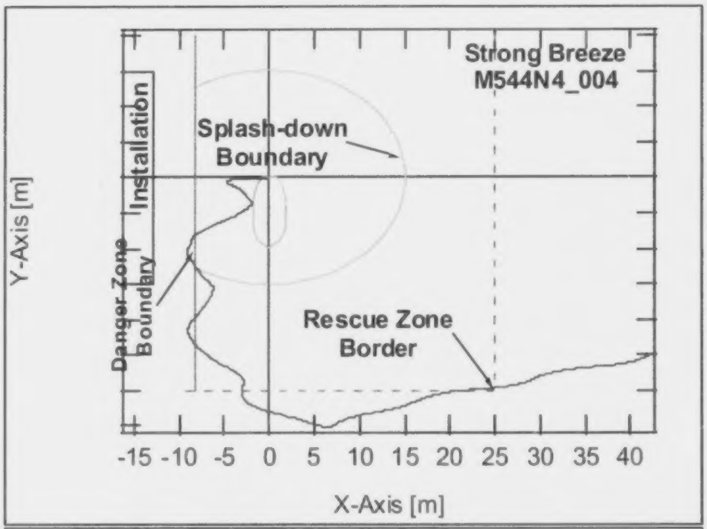
0
-5
-10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Strong Breeze
M544N4_004
Installation
Splash-down
Boundary
Danger Zone
Boundary
Rescue Zone
Border
Y-Axis [m]
-15
-10
-5
0
5
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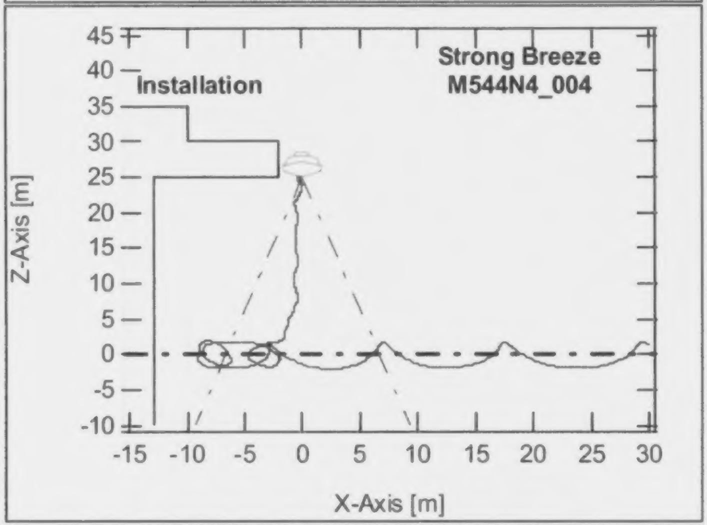
15
20
25
30
35
40
X-Axis [m]


Strong Breeze
M544N4_004
Installation
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-5
-10
Z-Axis [m]
-15
-10
-5
0
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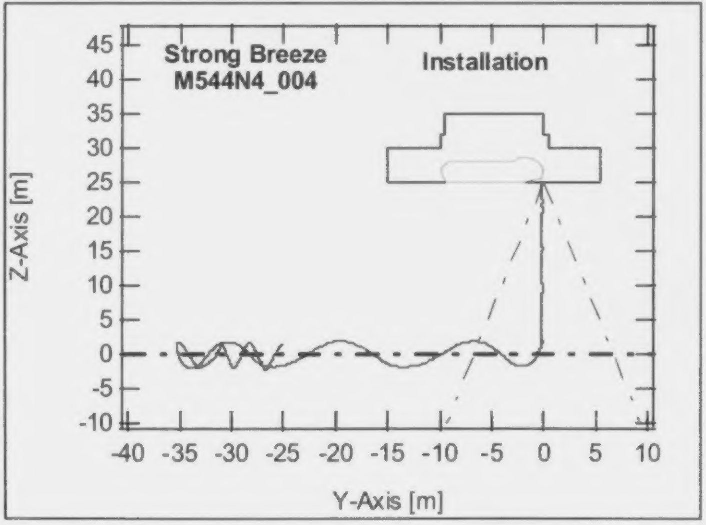
10
15
20
25
30
X-Axis [m]


Strong Breeze
M544N4_004
Installation
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25
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10
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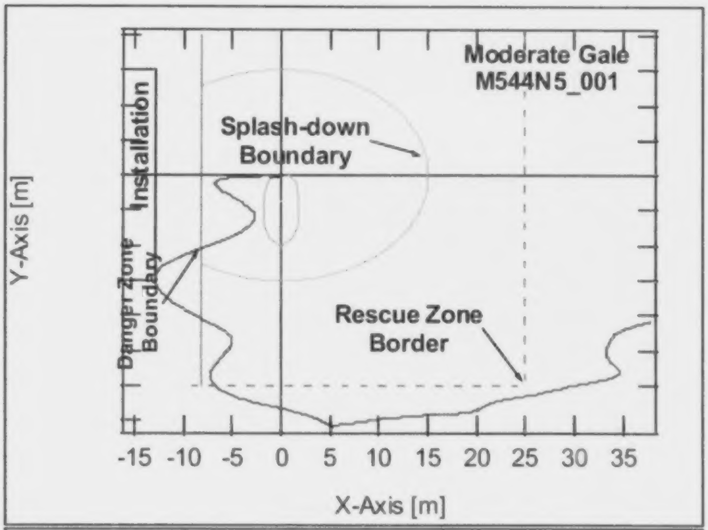
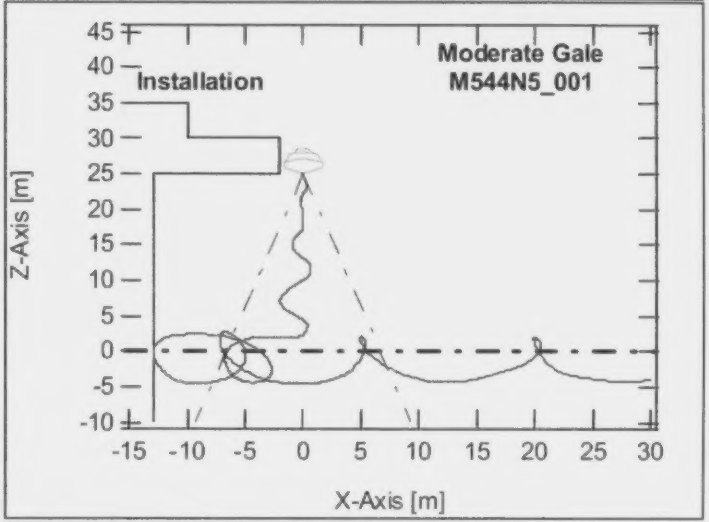
0
-5
-10
Z-Axis [m]
-40
-35
-30
-25
-20
-15
-10
-5
0
5
10
Y-Axis [m]


Moderate Gale
M544N5_001
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15
-10
-5
0
5
10
15
20
25
30
35
X-Axis [m]


Installation
Moderate Gale
M544N5_001
45
40
35
30
25
20
15
10
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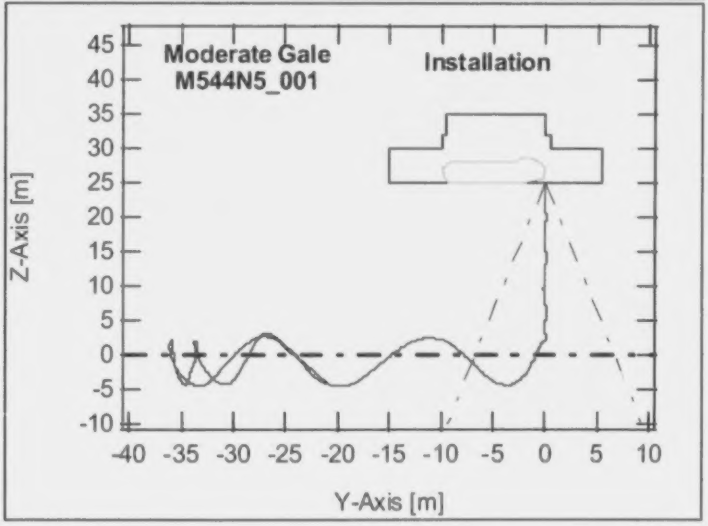
0
-5
-10
Z-Axis [m]
-15
-10
-5
0
5
10
15
20
25
30
X-Axis [m]


Moderate Gale
M544N5_001
Installation
45
40
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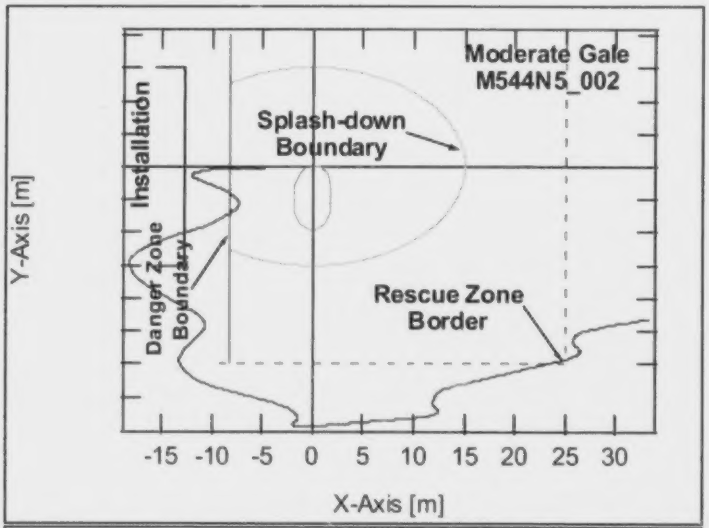
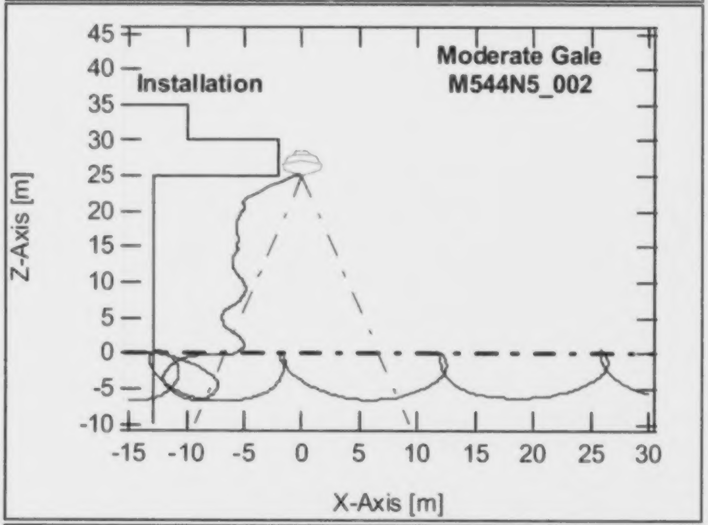
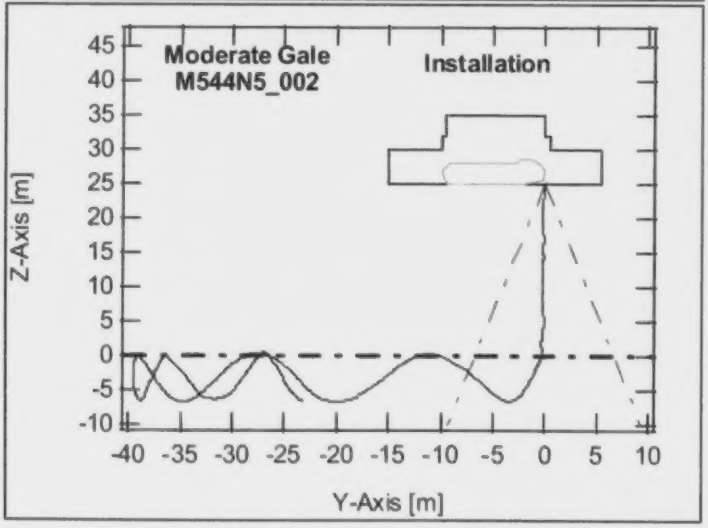
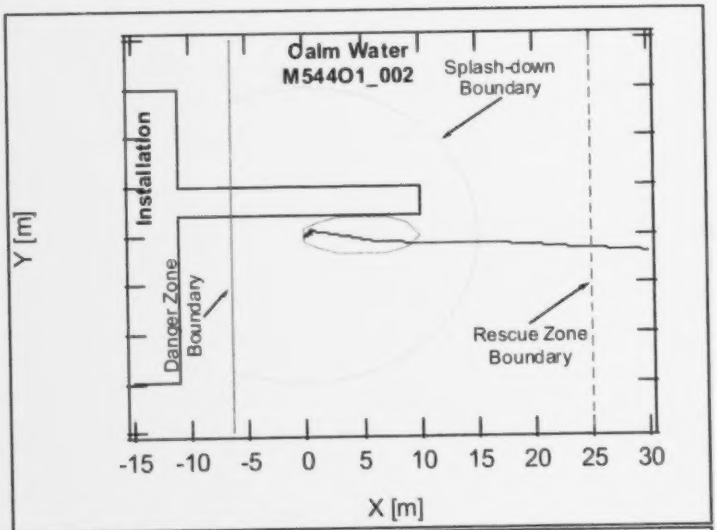
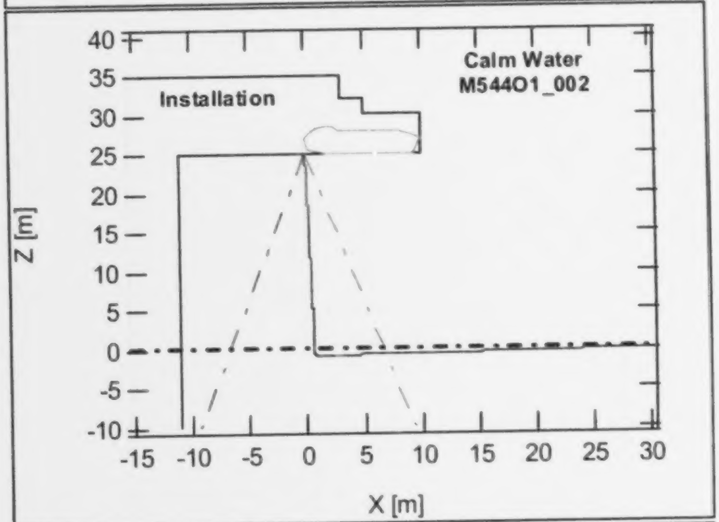
30
25
20
15
10
5
0
-5
-10
Z-Axis [m]
-40
-35
-30
-25
-20
-15
-10
-5
0
5
10
Y-Axis [m]


Moderate Gale
M544N5_002
Installation
Splash-down Boundary
Danger Zone Boundary
Rescue Zone Border
Y-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544N5_002
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-15 -10 -5 0 5 10 15 20 25 30
X-Axis [m]


Moderate Gale
M544N5_002
Installation
45 40 35 30 25 20 15 10 5 0 -5 -10
Z-Axis [m]
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10
Y-Axis [m]


Calm Water
M544O1_002
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15
-10
-5
0
5
10
15
20
25
30
X [m]


40
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0
-5
-10
Z [m]
Installation
Calm Water
M544O1_002
-15
-10
-5
0
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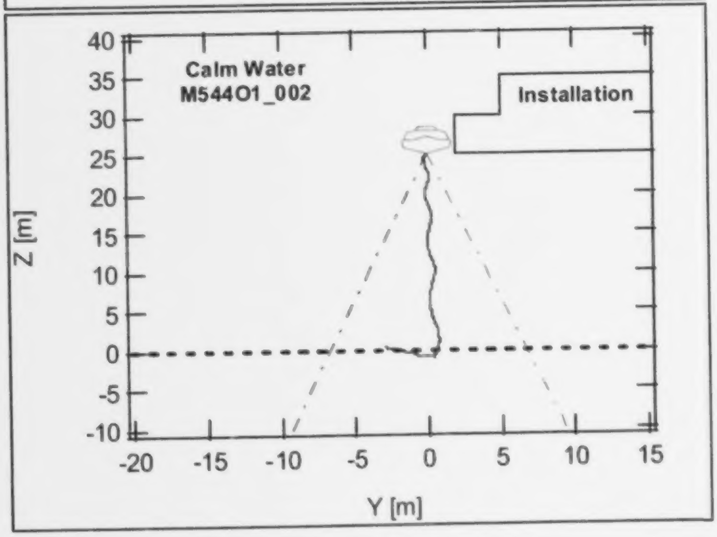
10
15
20
25
30
X [m]


40
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0
-5
-10
Z [m]
Calm Water
M544O1_002
Installation
-20
-15
-10
-5
0
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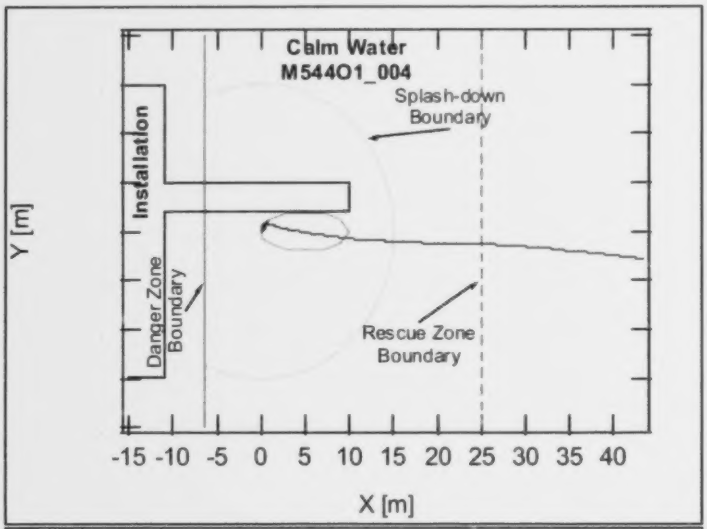
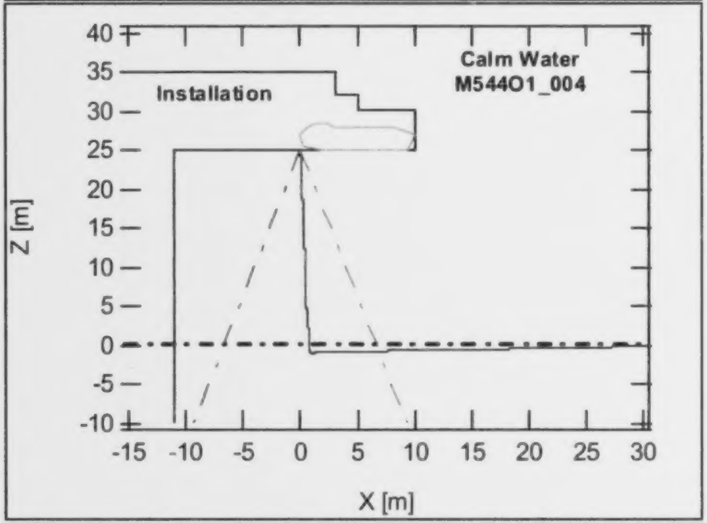

Calm Water
M544O1_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Calm Water
M544O1_004
Installation
Z [m]
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-15 -10 -5 0 5 10 15 20 25 30
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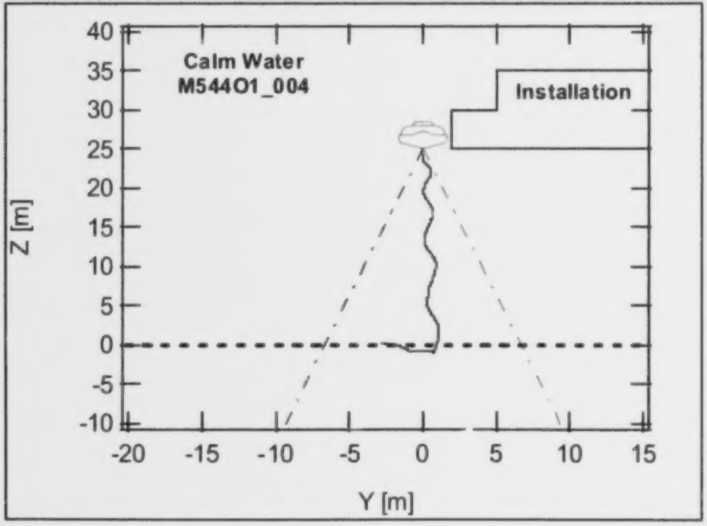
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Installation
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-20 -15 -10 -5 0 5 10 15
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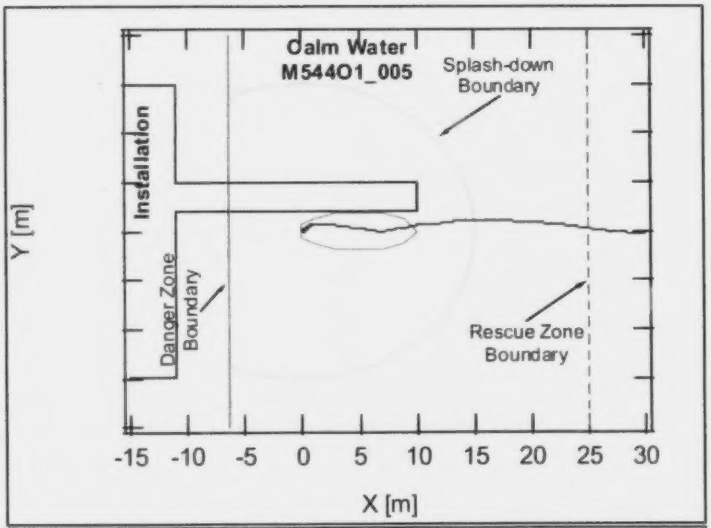
Calm Water
M544O1_005
Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
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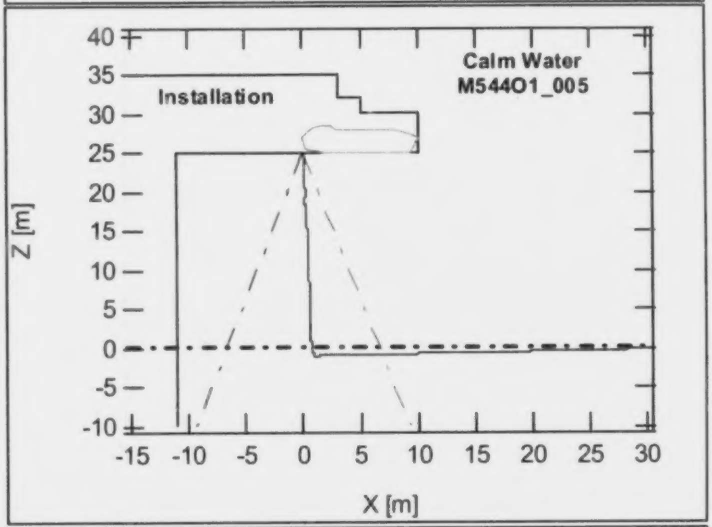
X [m]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Installation
Calm Water
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Z [m]
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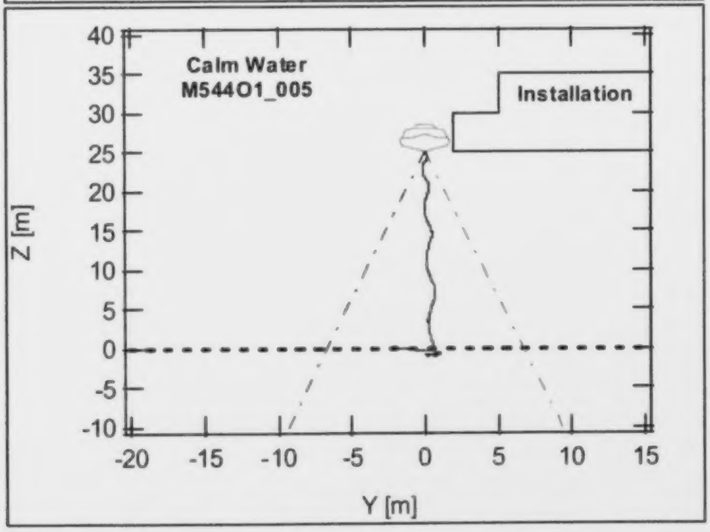
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Calm Water
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Installation
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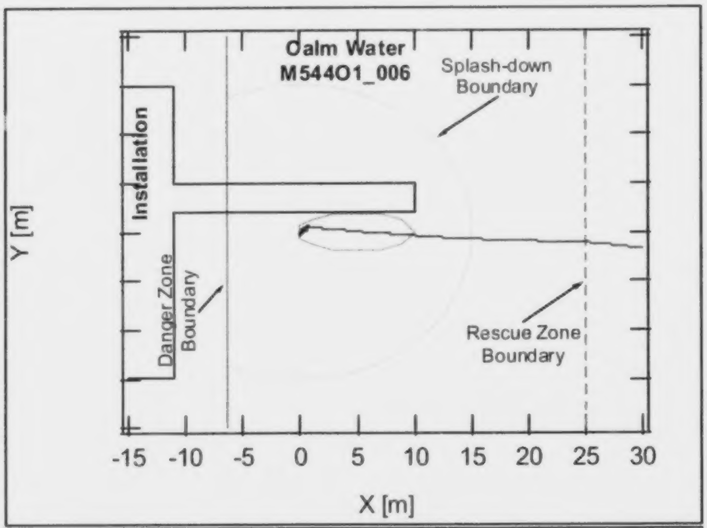
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Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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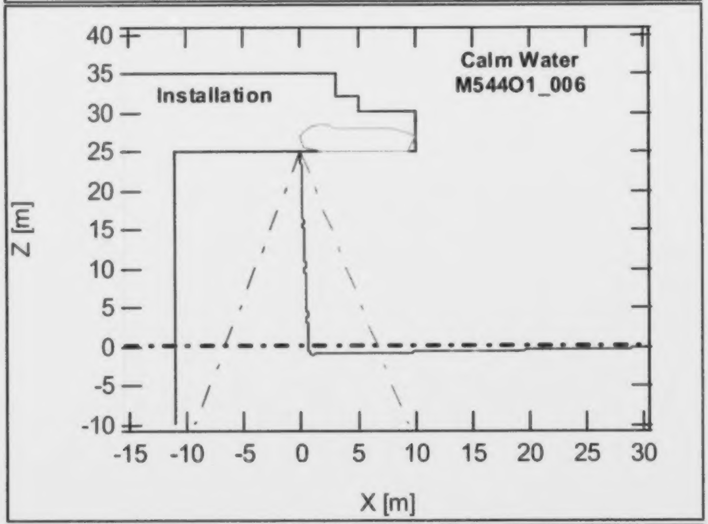
X [m]


Calm Water
M544O1_006
Installation
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Z [m]
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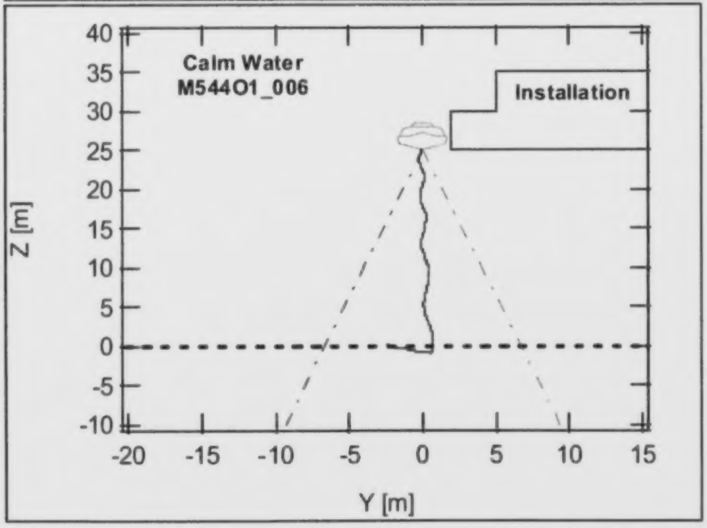
X [m]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Installation
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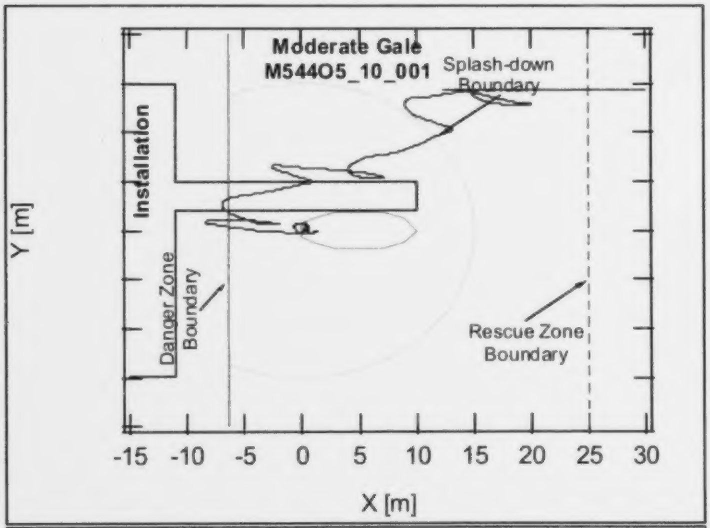
Y [m]


Moderate Gale
M544O5_10_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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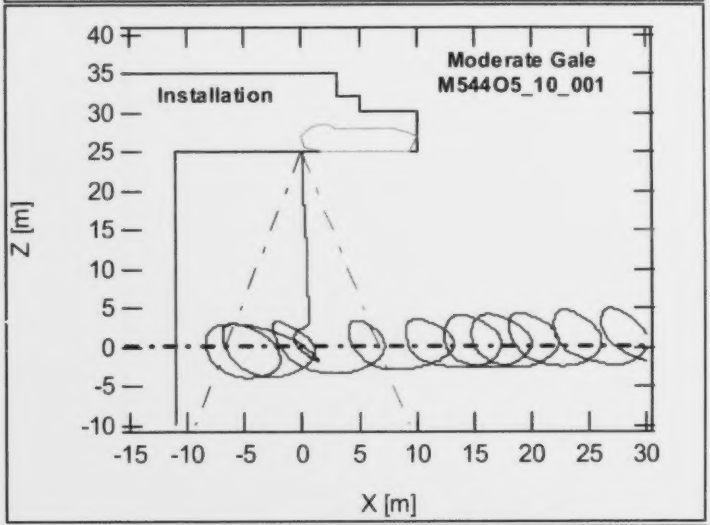
X [m]


Moderate Gale
M544O5_10_001
Installation
Z [m]
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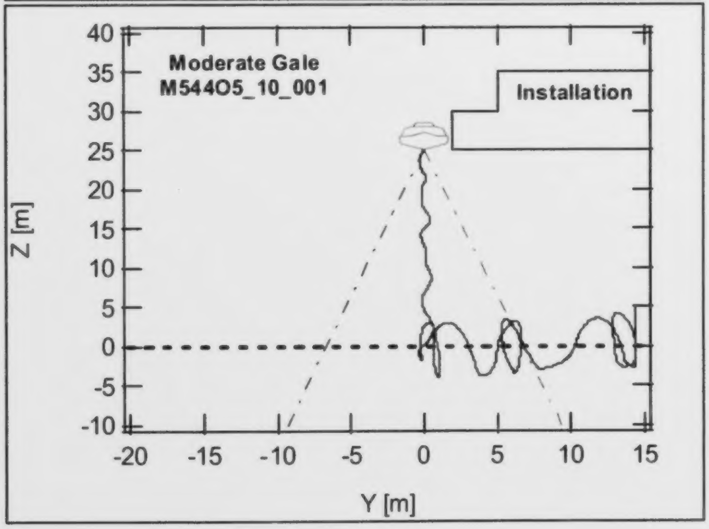
X [m]


Moderate Gale
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Installation
Z [m]
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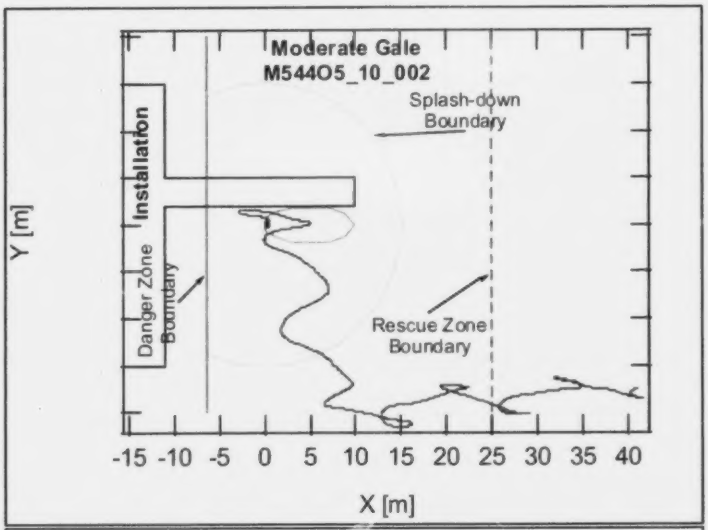
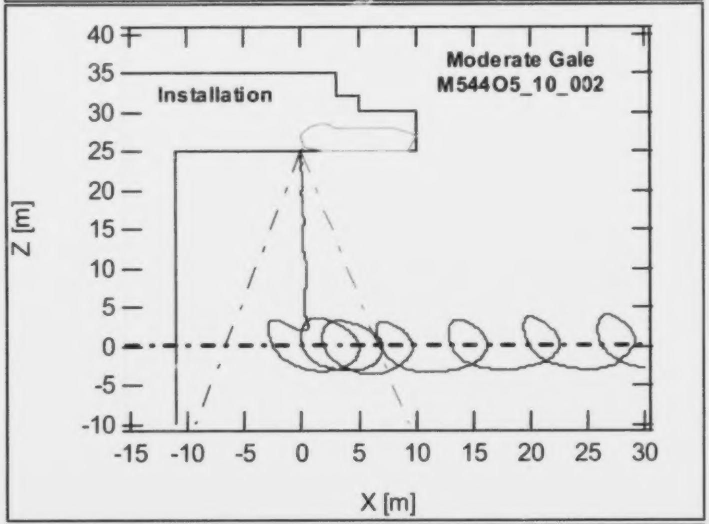
Y [m]


Moderate Gale
M544O5_10_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]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Installation
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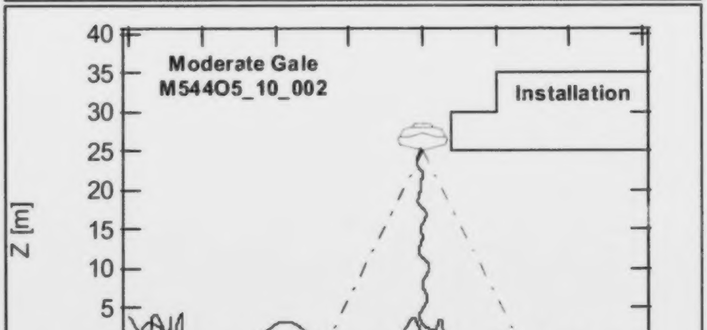
X [m]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Installation
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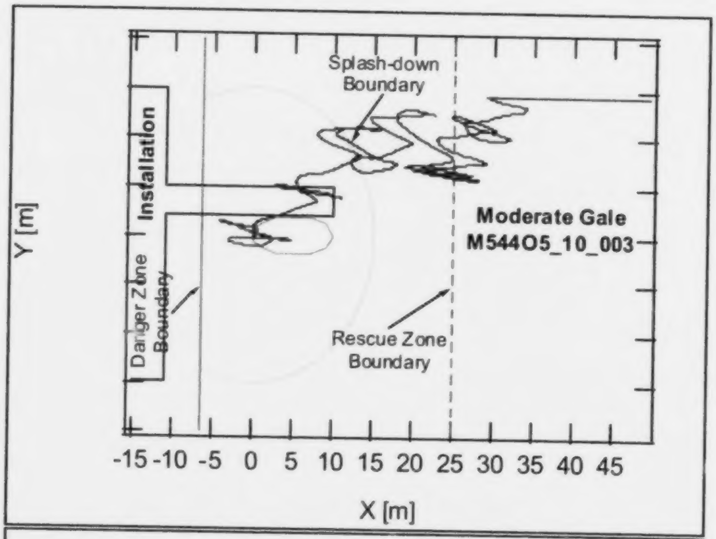
Splash-down Boundary
Installation
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M544O5_10_003
Danger Zone Boundary
Rescue Zone Boundary
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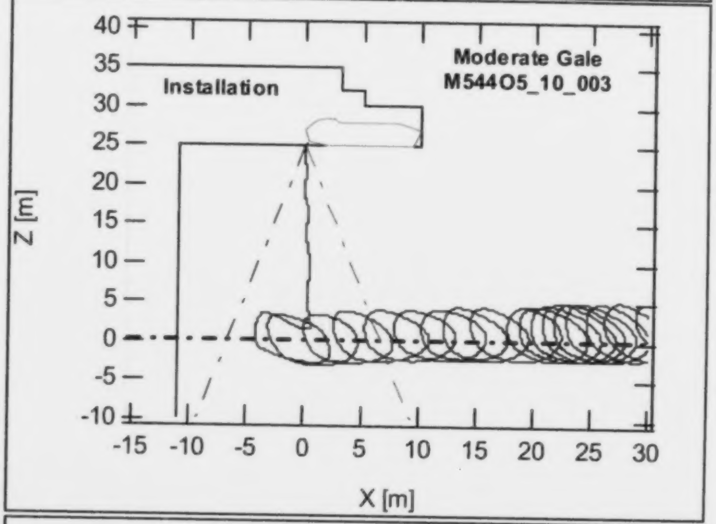
X [m]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Installation
Moderate Gale
M544O5_10_003
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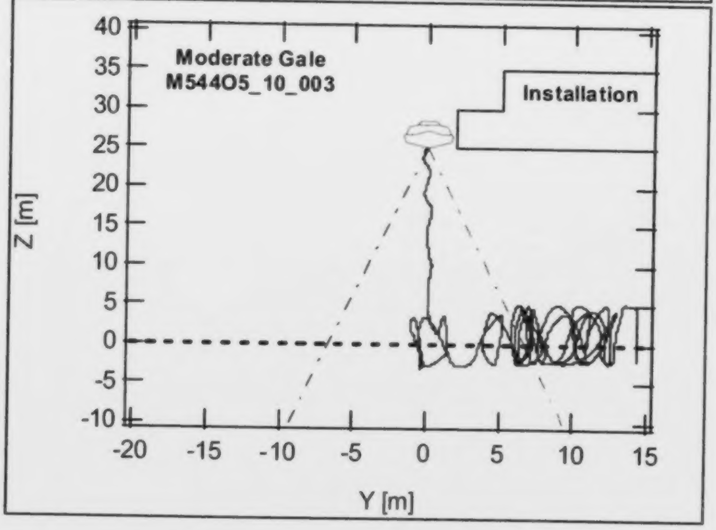
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Moderate Gale
M544O5_10_003
Installation
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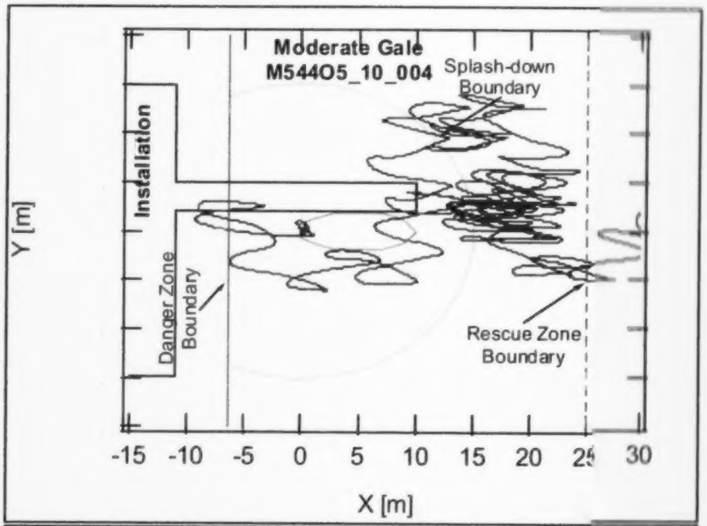
Y [m]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Splash-down Boundary
Installation
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Danger Zone Boundary
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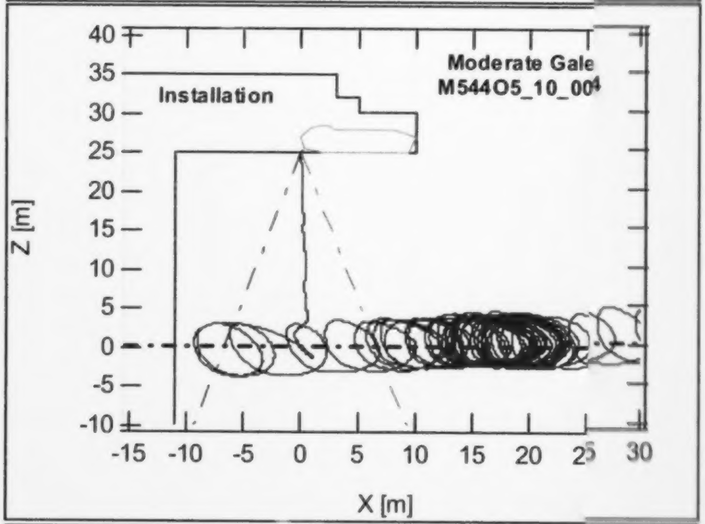
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Installation
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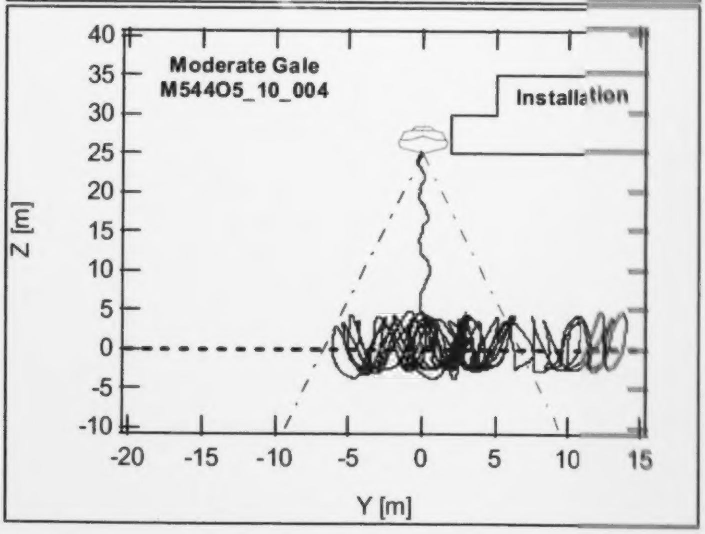
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Installation
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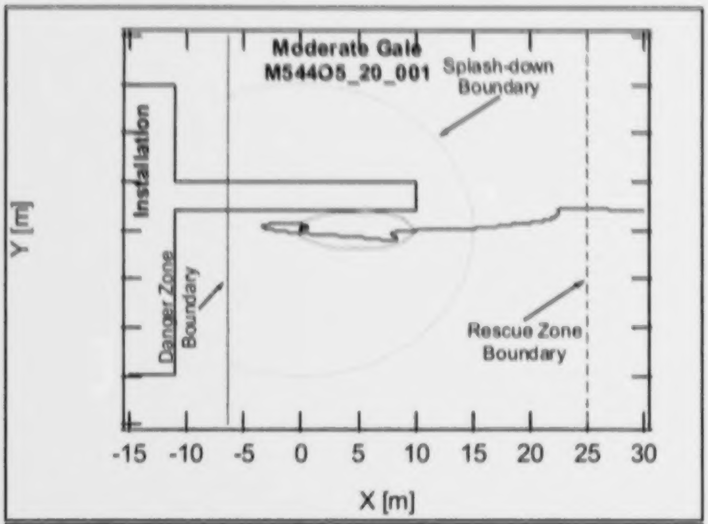
Moderate Gale
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Splash-down Boundary
Installation
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Danger Zone Boundary
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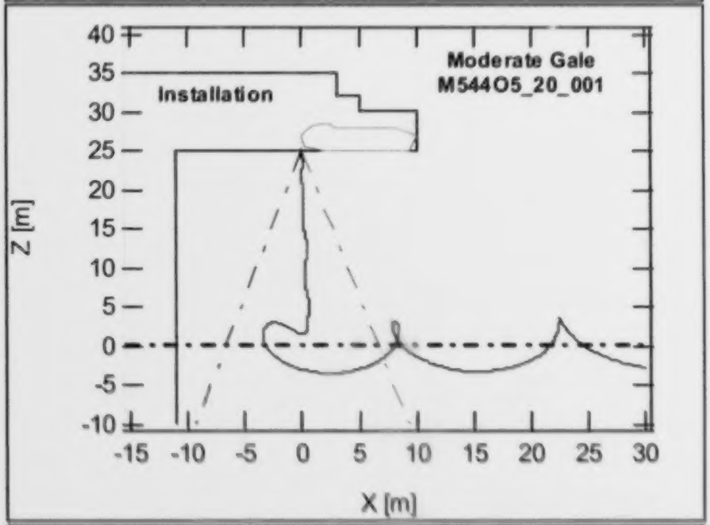
Moderate Gale
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Installation
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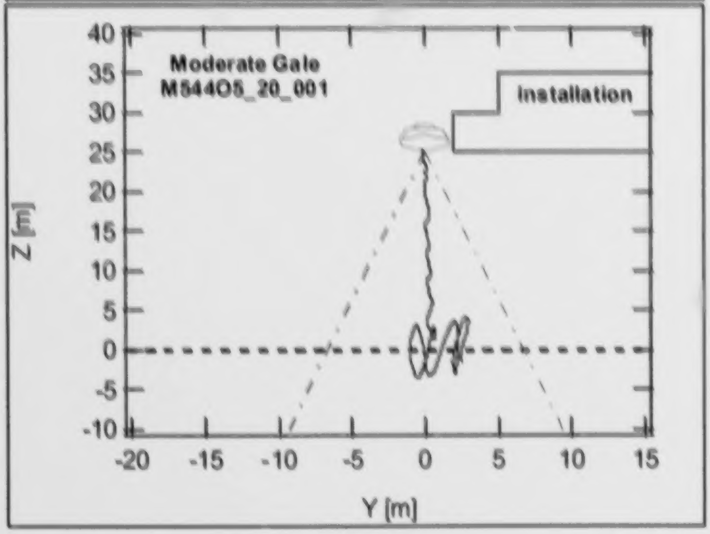
Moderate Gale
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Installation
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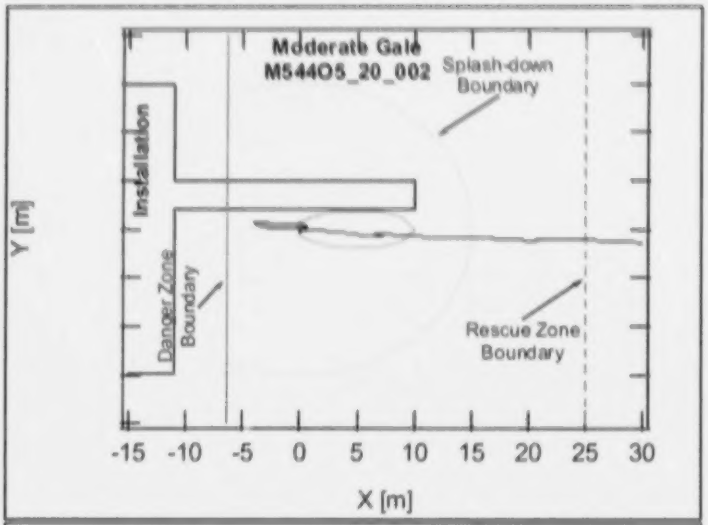
Moderate Gale
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Splash-down Boundary
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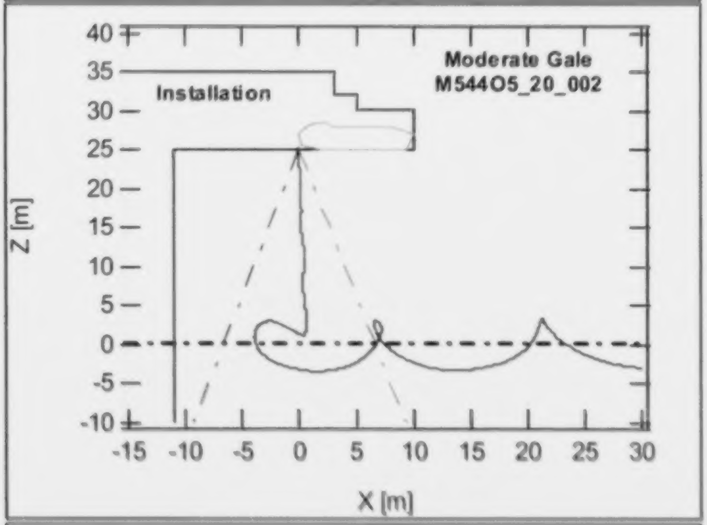
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Installation
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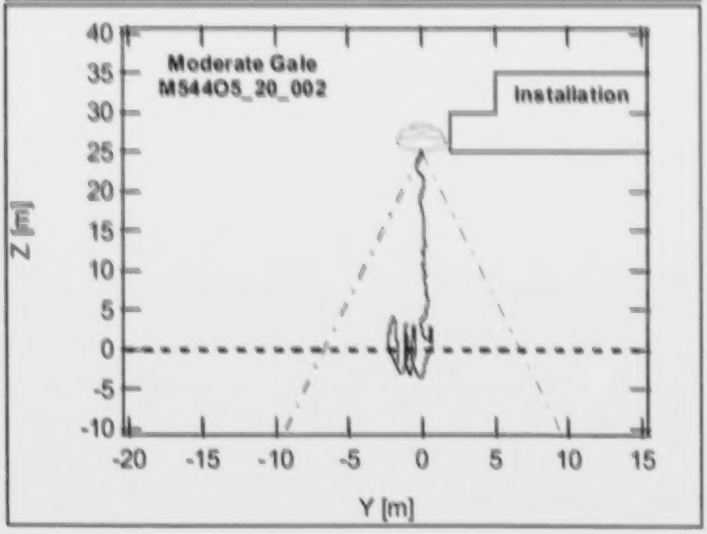
Moderate Gale
M544O5_20_002
Installation
Z [m]
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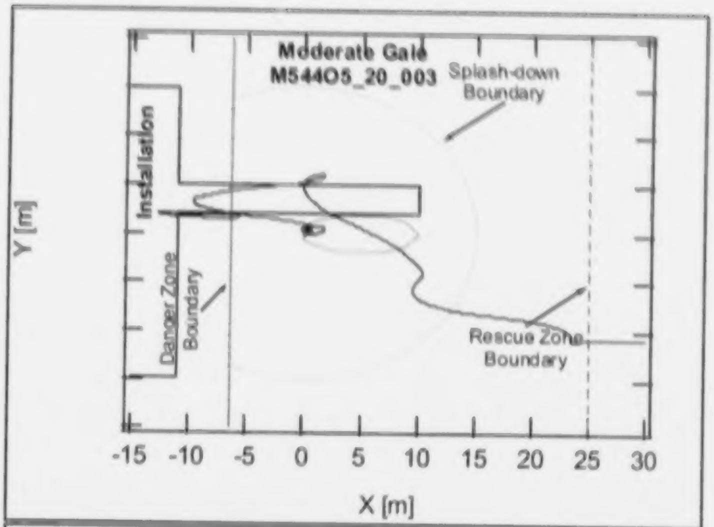
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Splash-down Boundary
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Danger Zone Boundary
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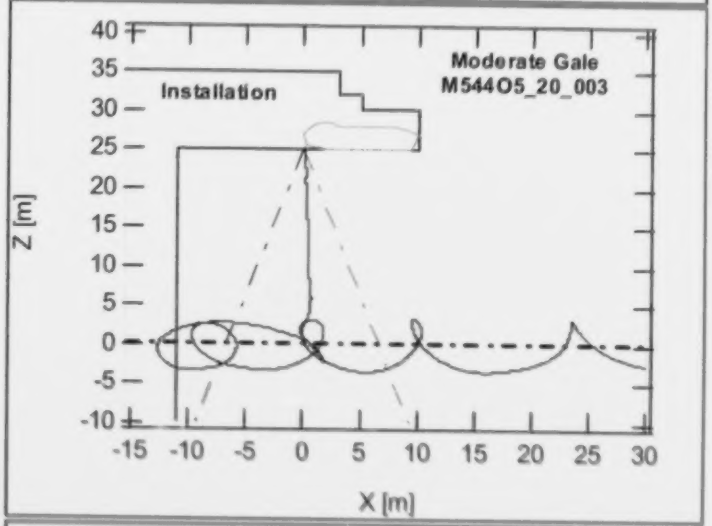
Moderate Gale
M544O5_20_003
Installation
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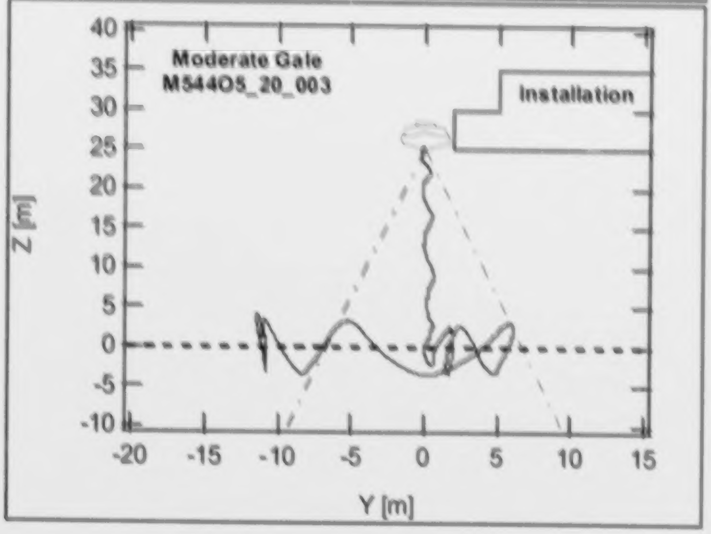
Moderate Gale
M544O5_20_003
Installation
Z [m]
Y [m]
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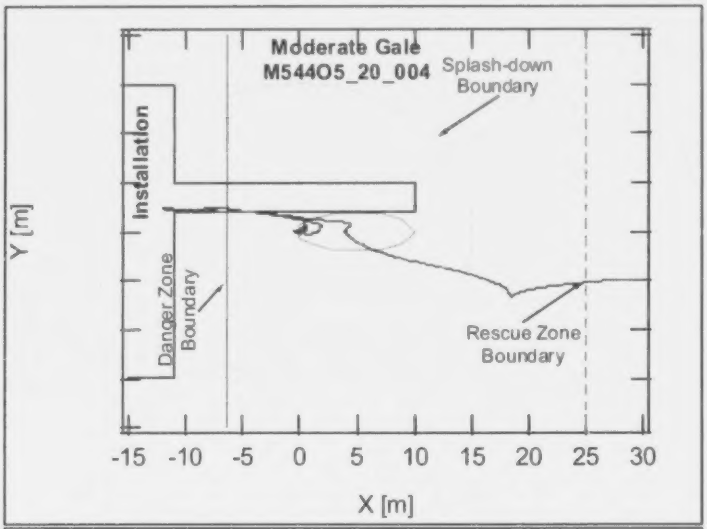
Moderate Gale
M544O5_20_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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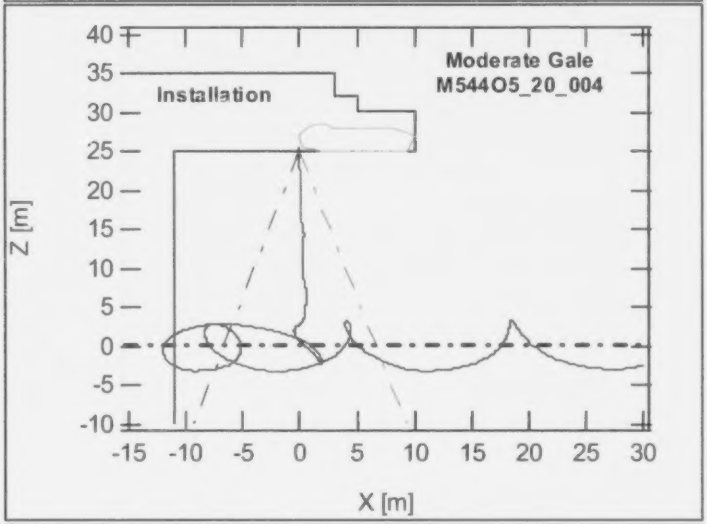
Moderate Gale
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Installation
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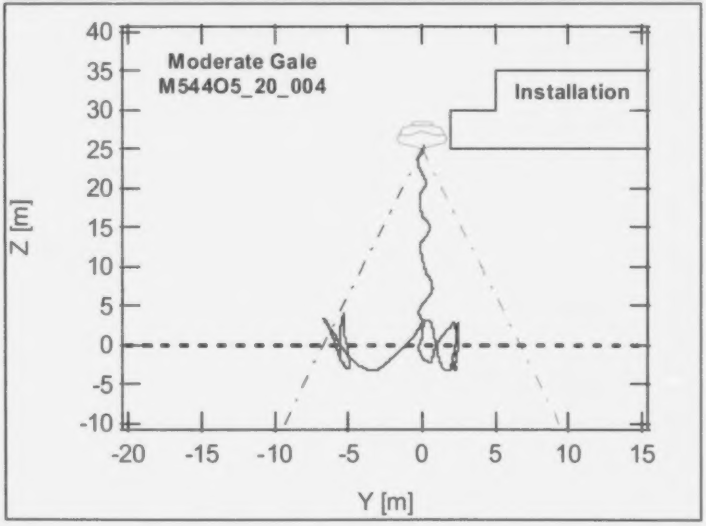
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Installation
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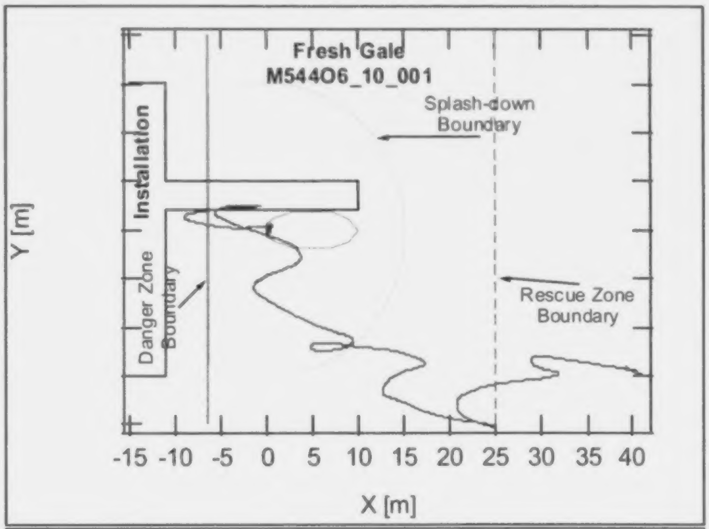
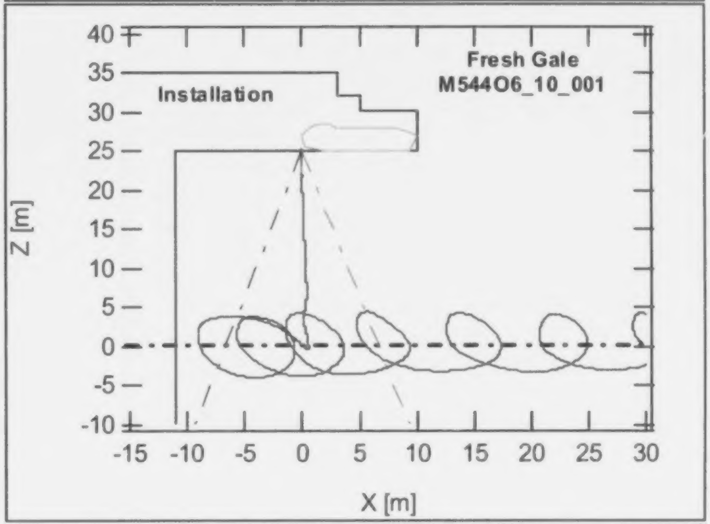
Y [m]


Fresh Gale
M544O6_10_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Fresh Gale
M544O6_10_001
Installation
Z [m]
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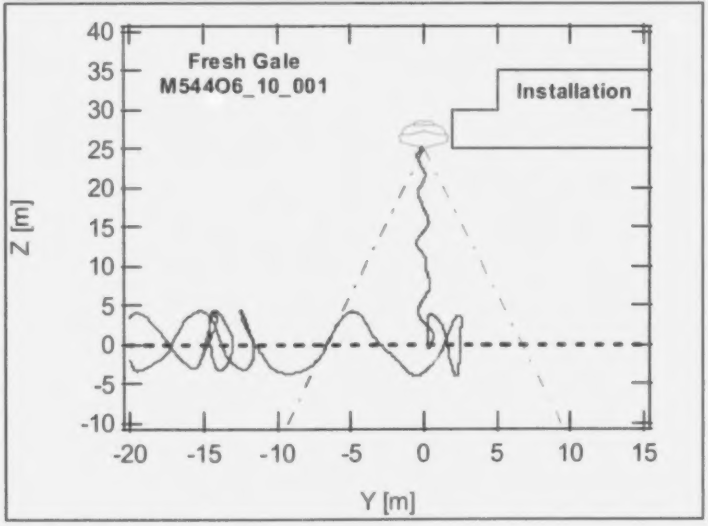
X [m]


Fresh Gale
M544O6_10_001
Installation
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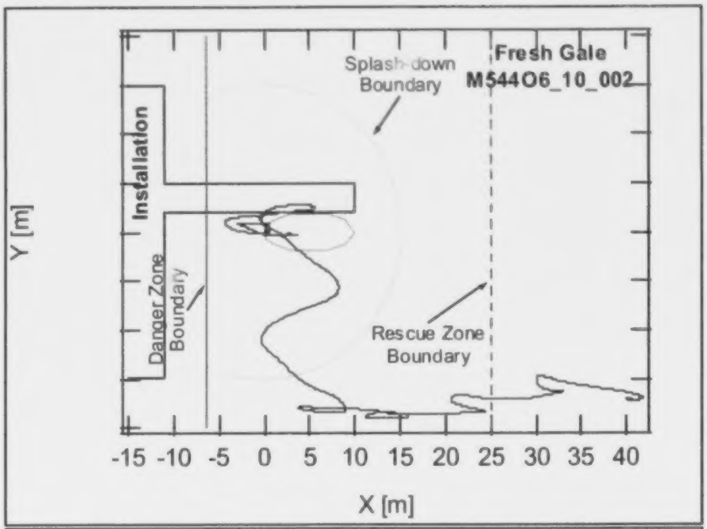
Fresh Gale
M544O6_10_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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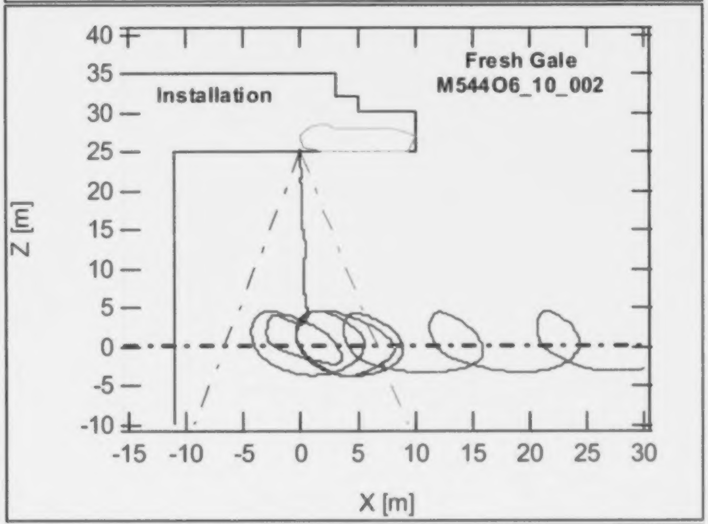
Fresh Gale
M544O6_10_002
Installation
Z [m]
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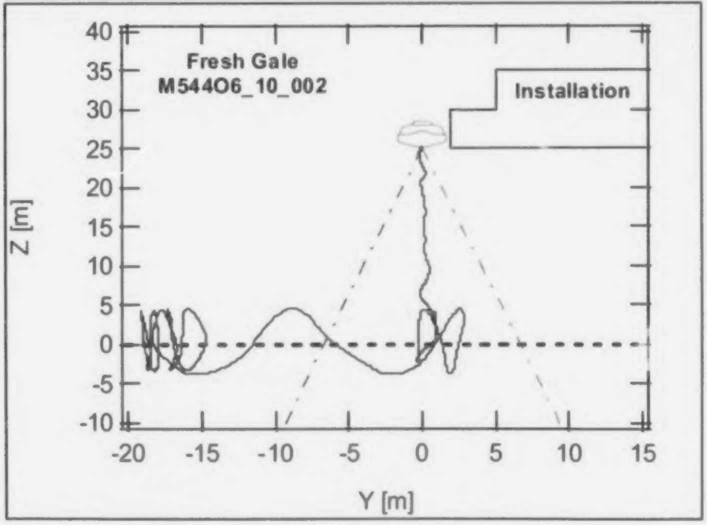
Fresh Gale
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Installation
Z [m]
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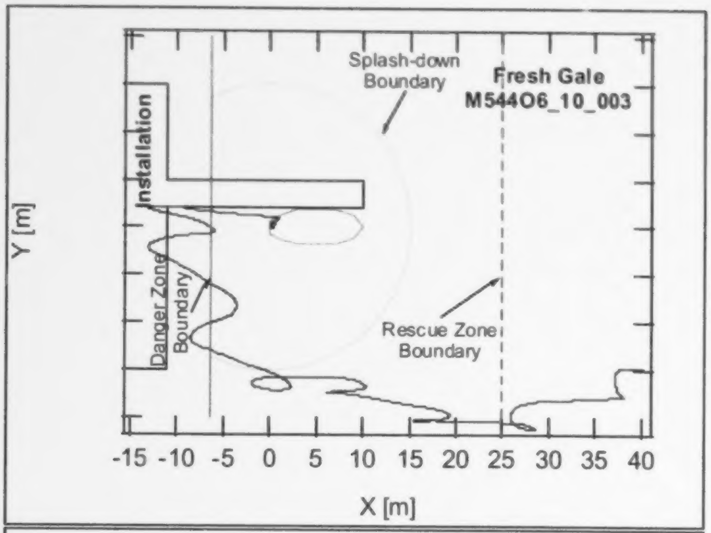
Splash-down Boundary
Fresh Gale
M544O6_10_003
Installation
Danger Zone Boundary
Rescue Zone Boundary
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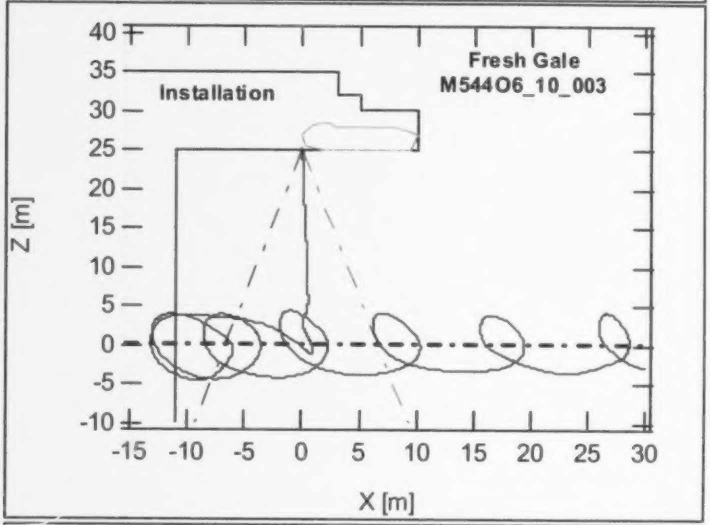
Fresh Gale
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Installation
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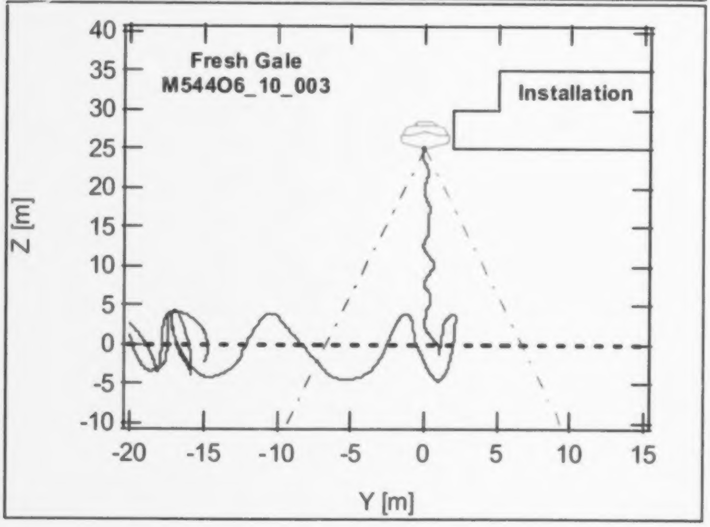
Fresh Gale
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Installation
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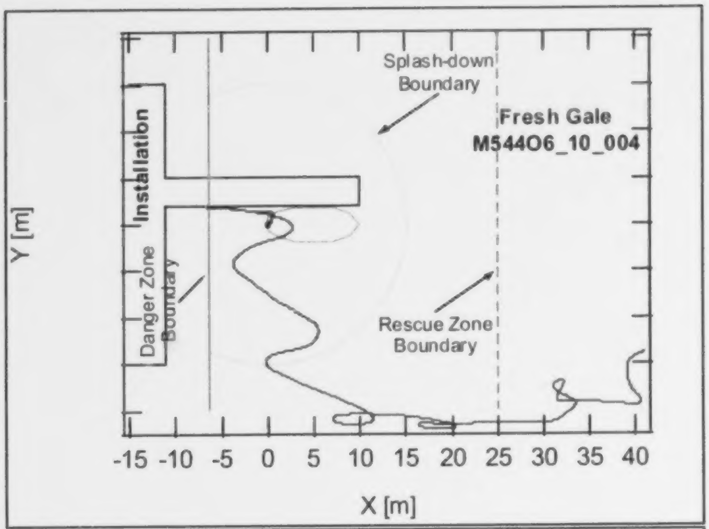
Y [m]


Splash-down Boundary
Fresh Gale
M544O6_10_004
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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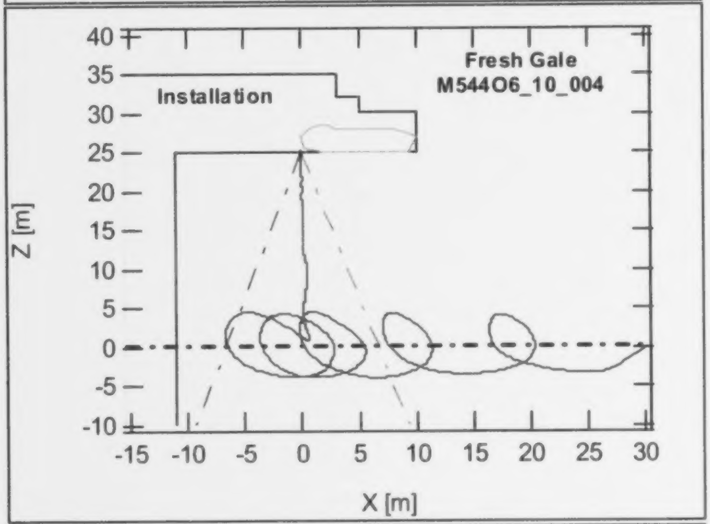
X [m]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M544O6_10_004
Installation
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Z [m]
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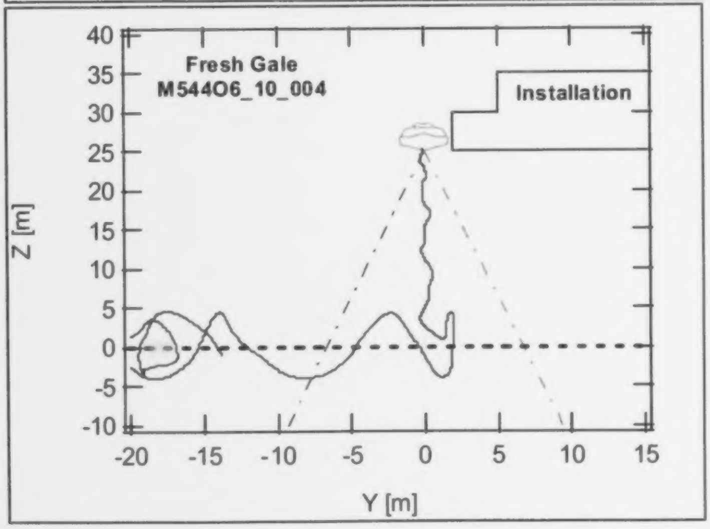
X [m]


Fresh Gale
M544O6_10_004
Installation
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Z [m]
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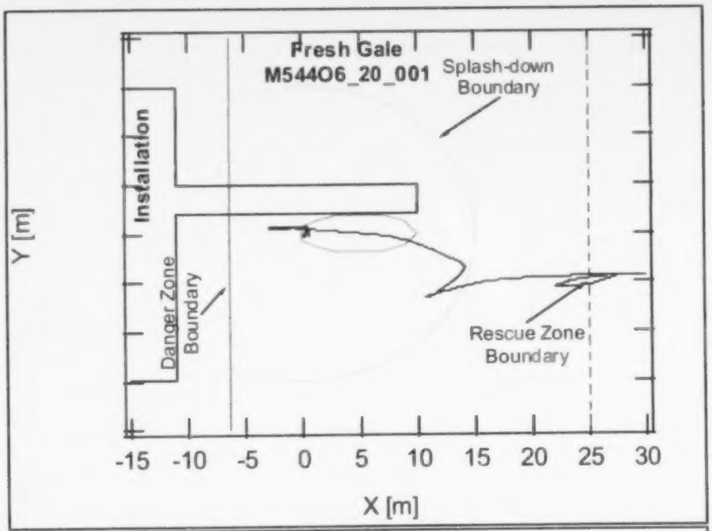
Y [m]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M544O6_20_001
Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
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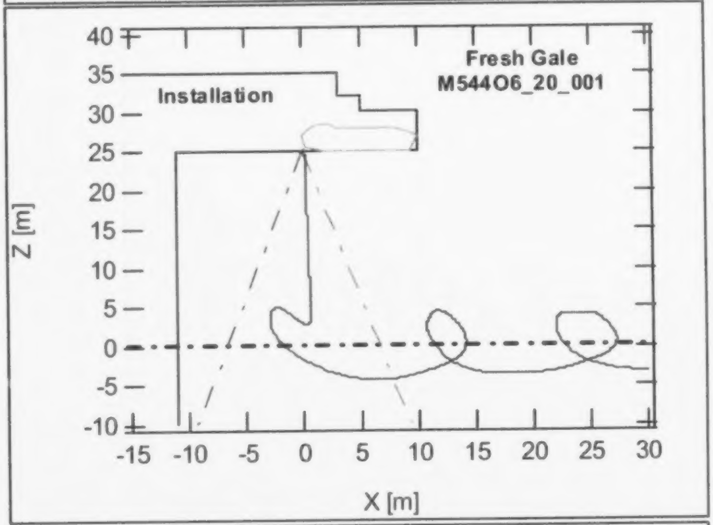
X [m]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M544O6_20_001
Installation
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Z [m]
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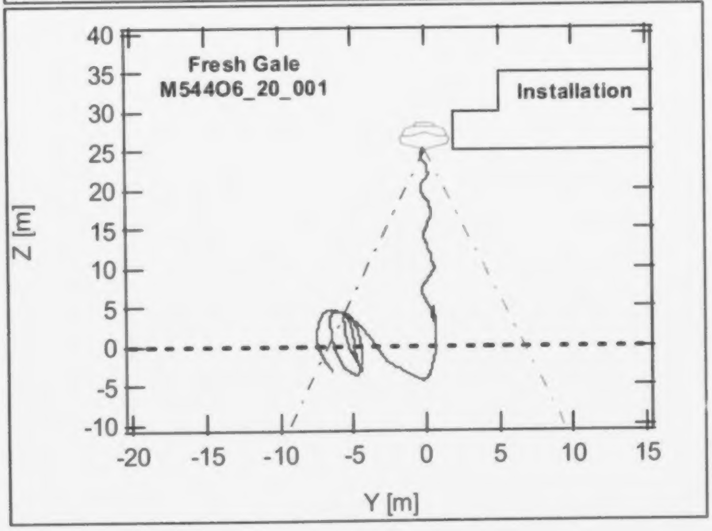
X [m]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M544O6_20_001
Installation
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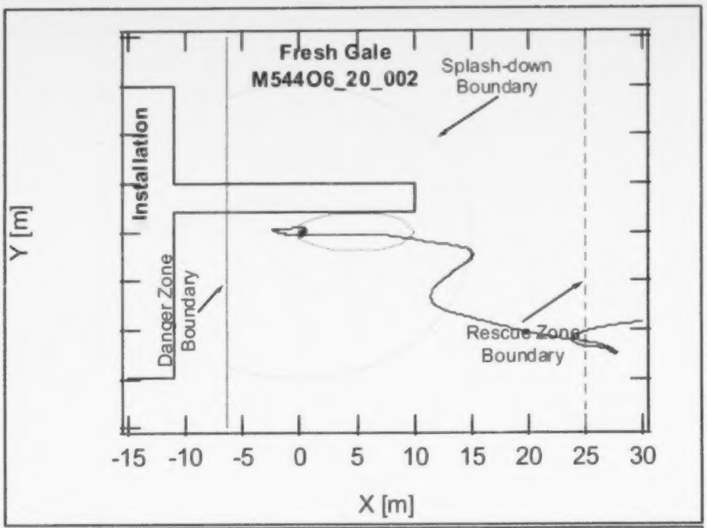
Y [m]


Fresh Gale
M544O6_20_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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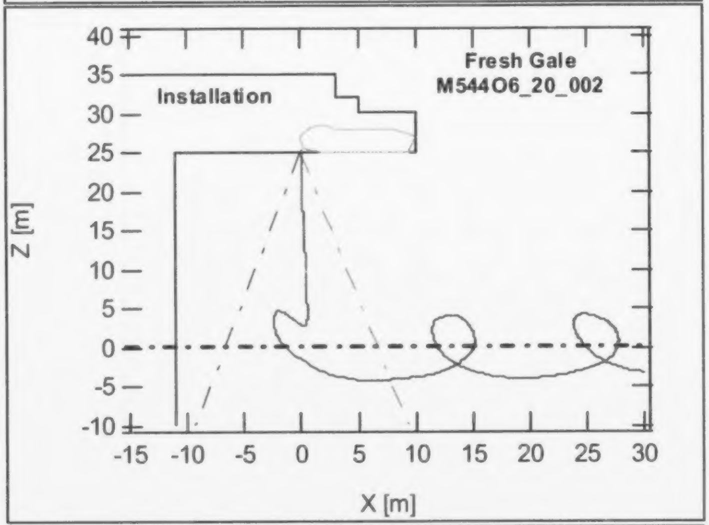
X [m]


Fresh Gale
M544O6_20_002
Installation
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Z [m]
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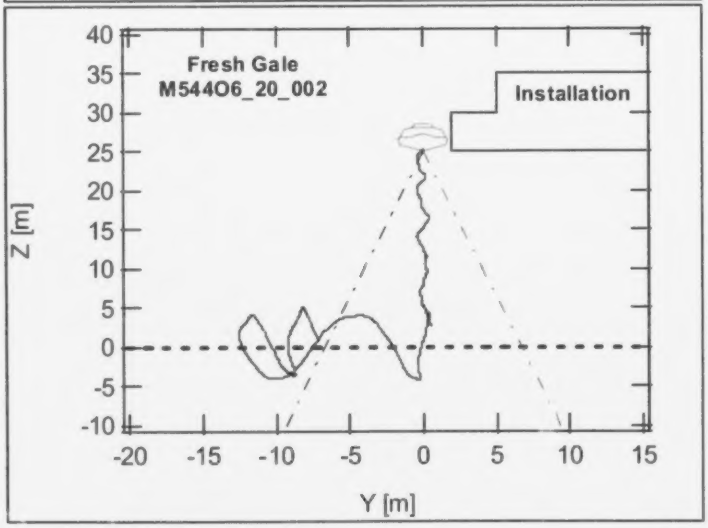
X [m]


Fresh Gale
M544O6_20_002
Installation
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Z [m]
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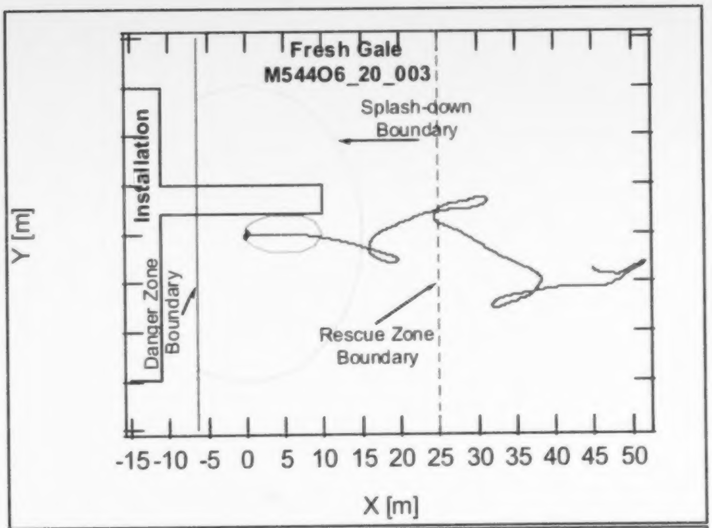
Y [m]


Fresh Gale
M544O6_20_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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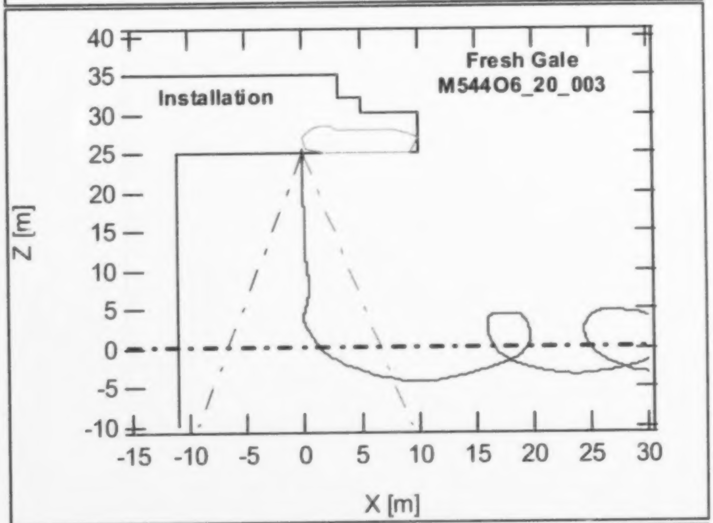
Fresh Gale
M544O6_20_003
Installation
Z [m]
X [m]
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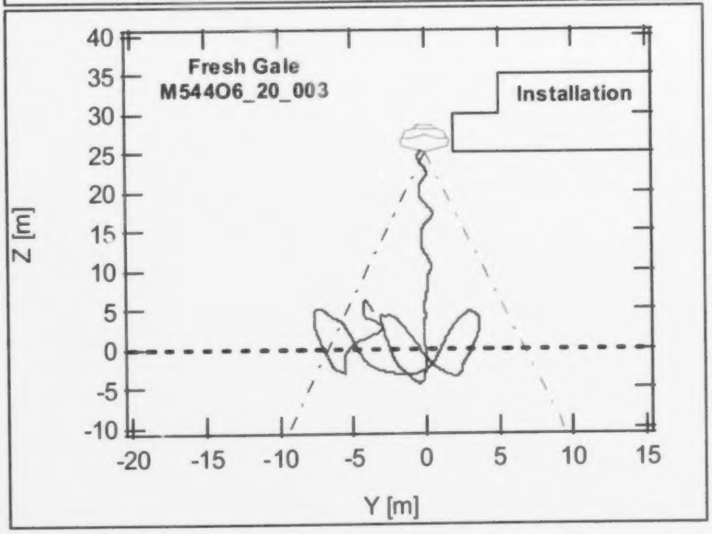
Fresh Gale
M544O6_20_003
Installation
Z [m]
Y [m]
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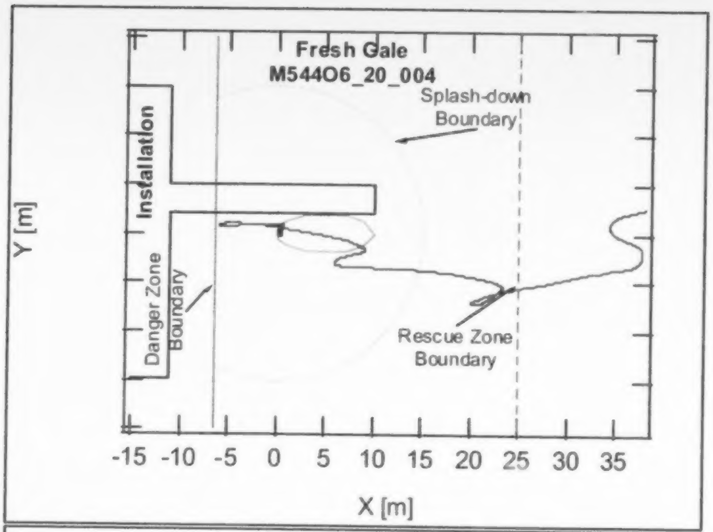
Fresh Gale
M544O6_20_004
Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
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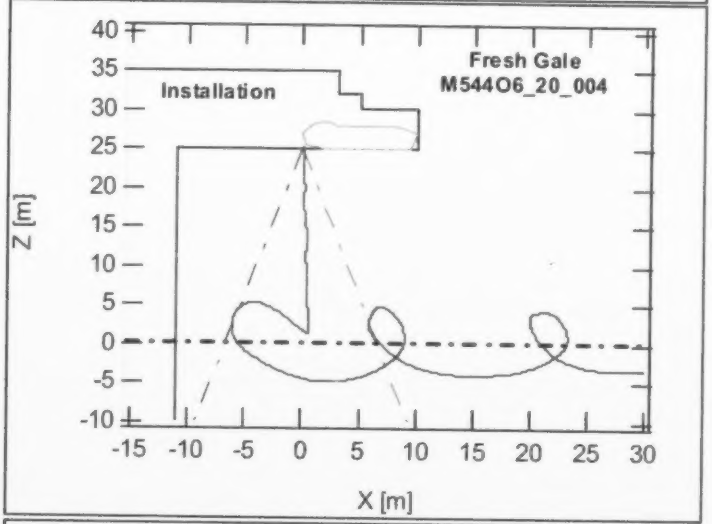
X [m]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Z [m]
Installation
Fresh Gale
M544O6_20_004
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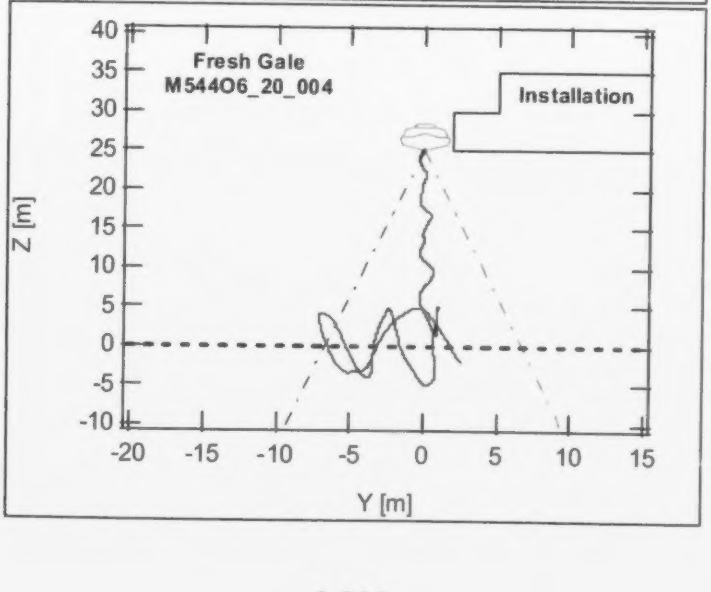
X [m]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Z [m]
Fresh Gale
M544O6_20_004
Installation
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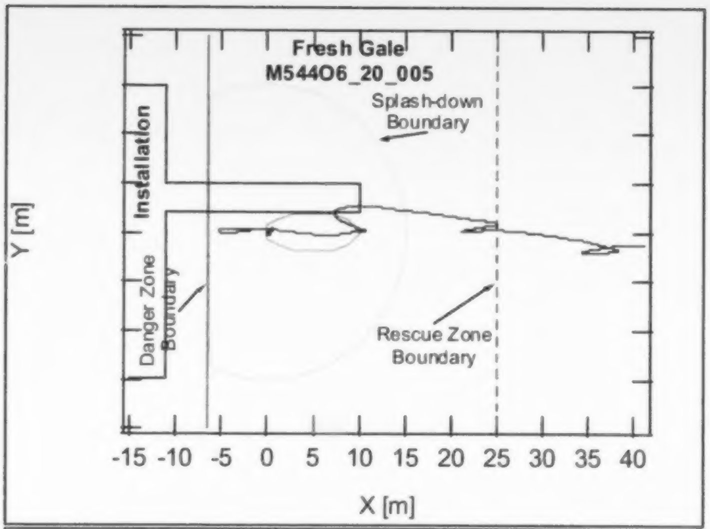
Y [m]


Fresh Gale
M544O6_20_005
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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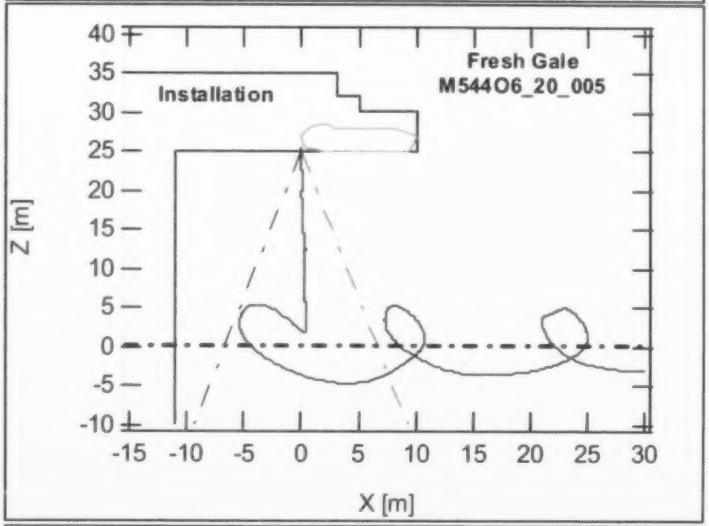
X [m]


Fresh Gale
M544O6_20_005
Installation
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Z [m]
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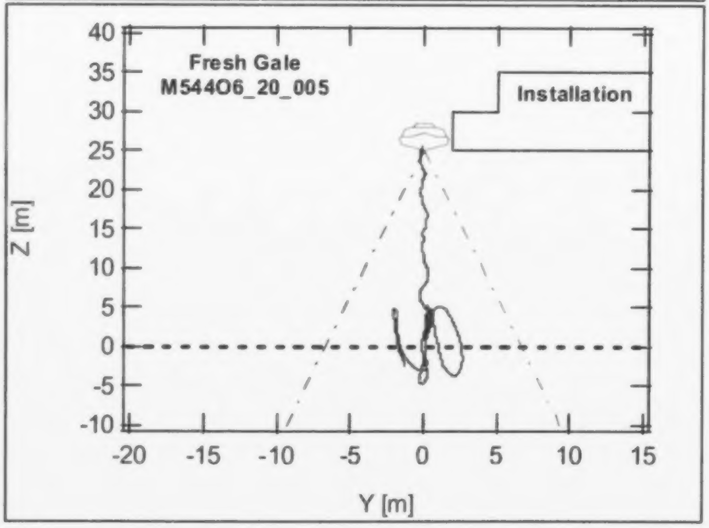
Fresh Gale
M544O6_20_005
Installation
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Z [m]
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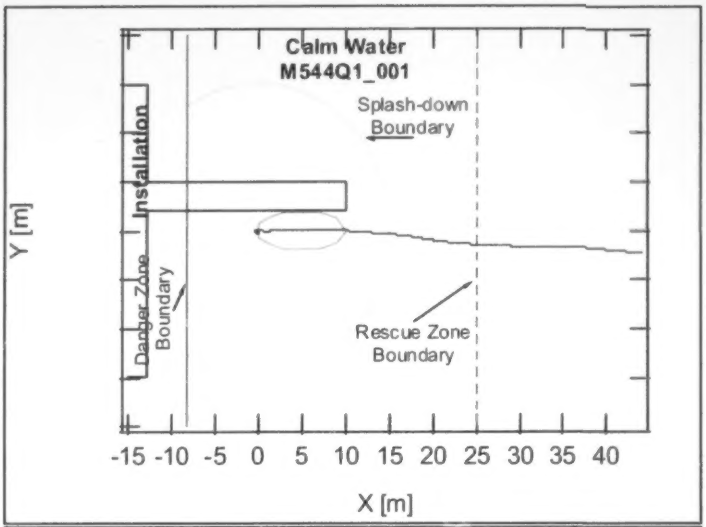
Y [m]


Calm Water
M544Q1_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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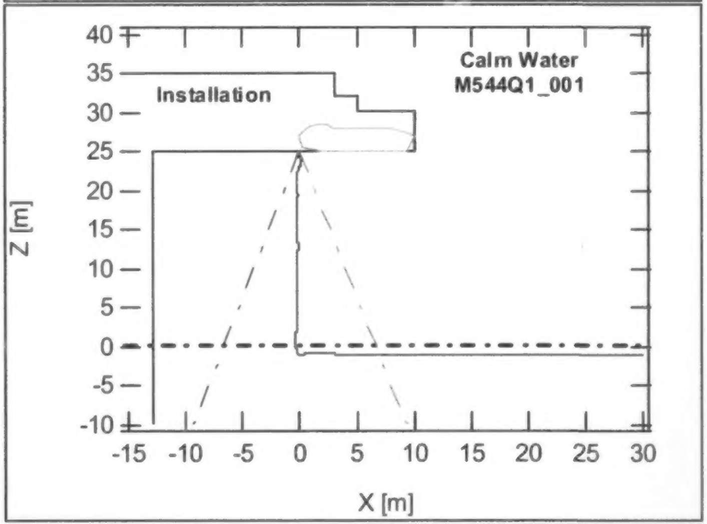
X [m]


Installation
Calm Water
M544Q1_001
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Z [m]
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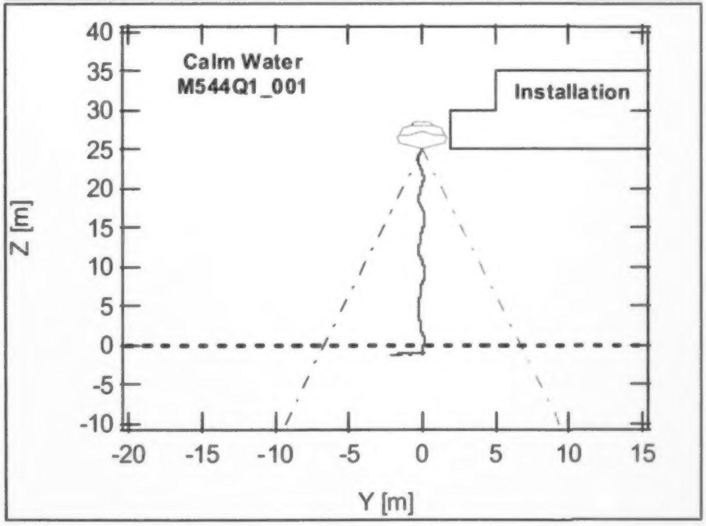
Calm Water
M544Q1_001
Installation
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Z [m]
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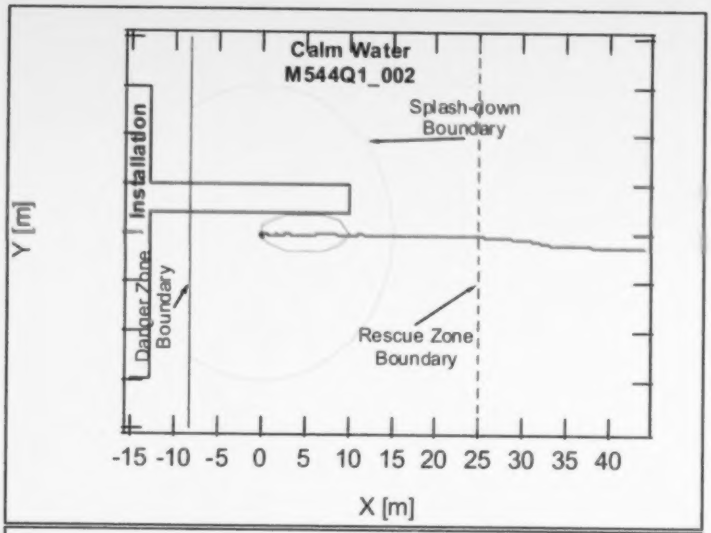
Y [m]


Calm Water
M544Q1_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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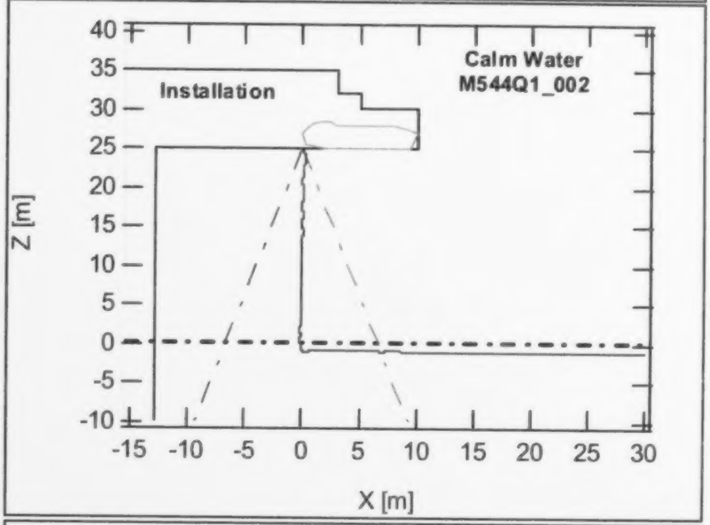
X [m]


Calm Water
M544Q1_002
Installation
Z [m]
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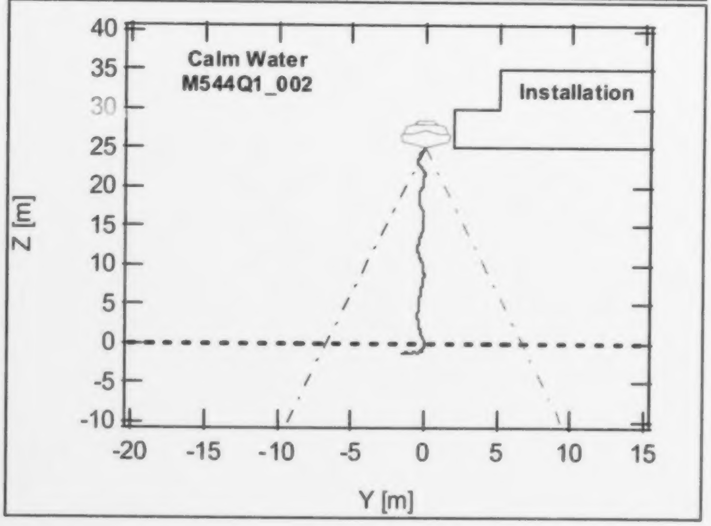
X [m]


Calm Water
M544Q1_002
Installation
Z [m]
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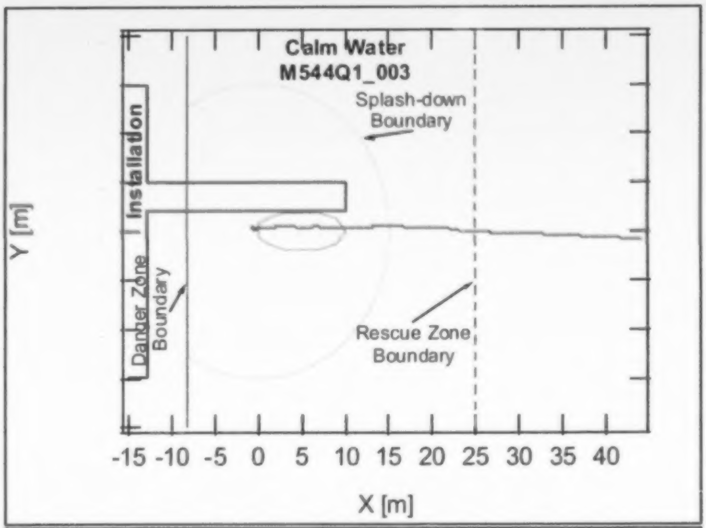
Y [m]


Calm Water
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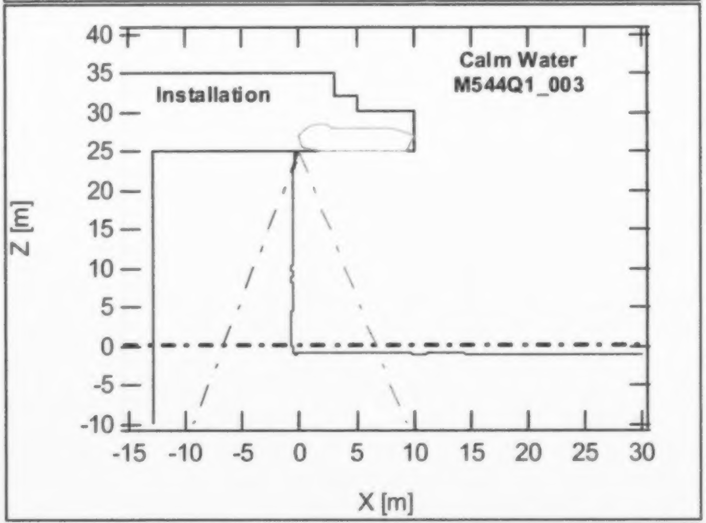
Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]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Z [m]
Installation
Calm Water
M544Q1_003
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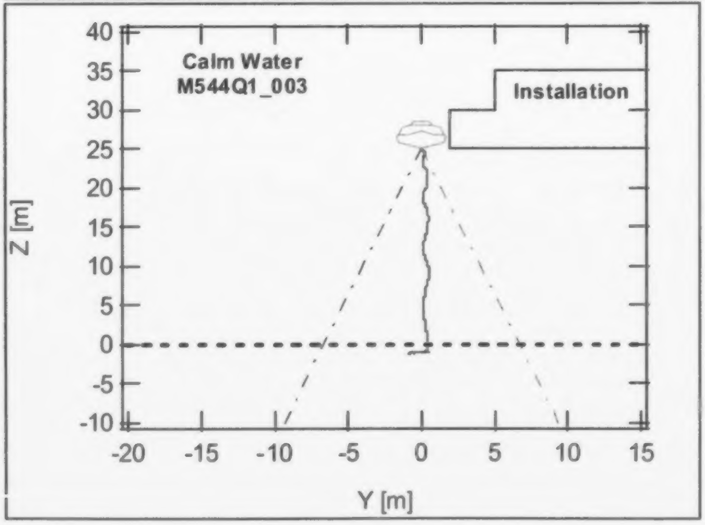
X [m]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Z [m]
Calm Water
M544Q1_003
Installation
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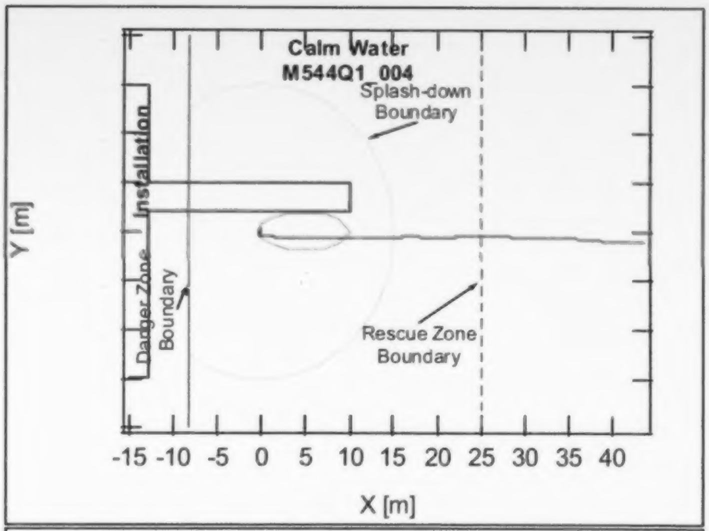
Y [m]


Calm Water
M544Q1_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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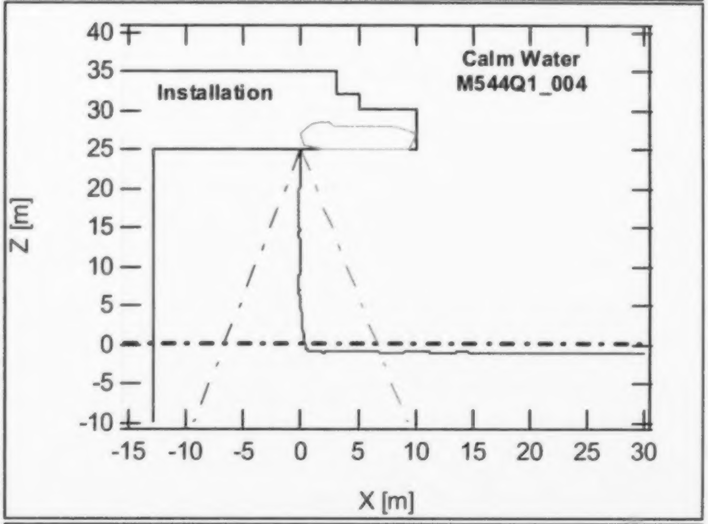
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Installation
Calm Water
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Z [m]
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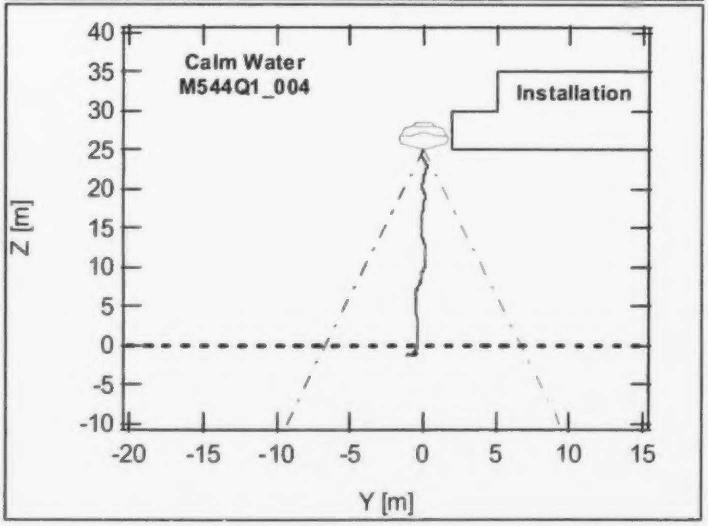
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Calm Water
M544Q1_004
Installation
Z [m]
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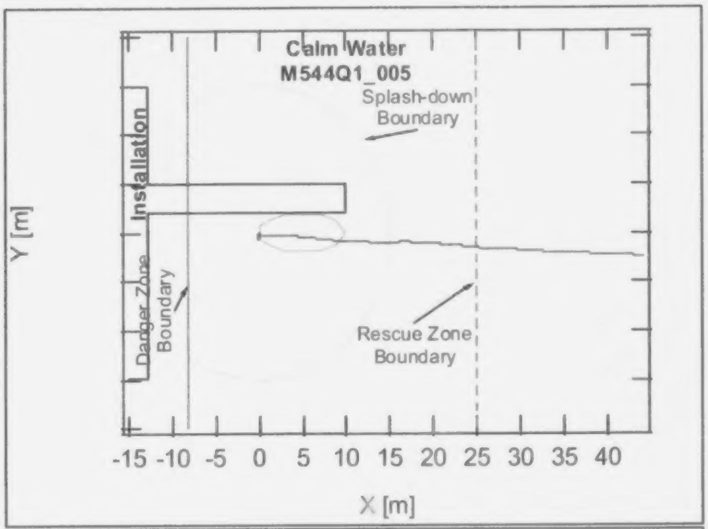
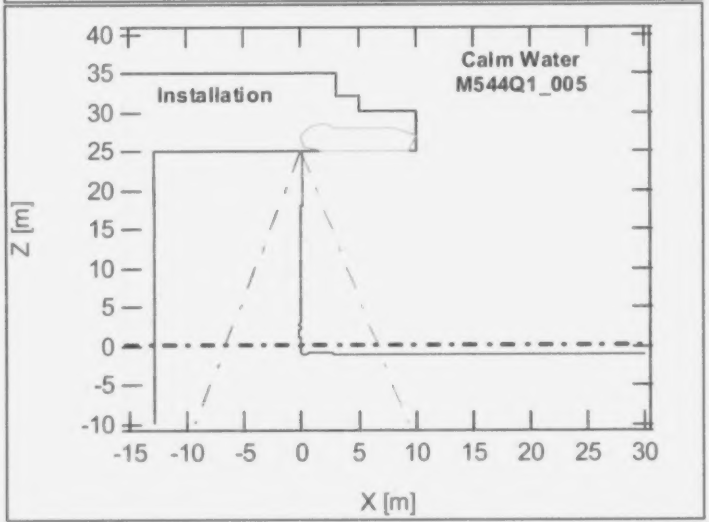
Y [m]


Calm Water
M544Q1_005
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Calm Water
M544Q1_005
Installation
Z [m]
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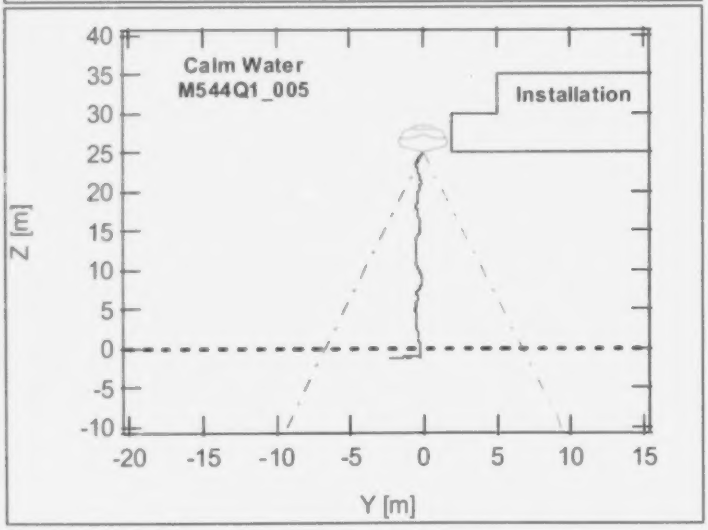
X [m]


Calm Water
M544Q1_005
Installation
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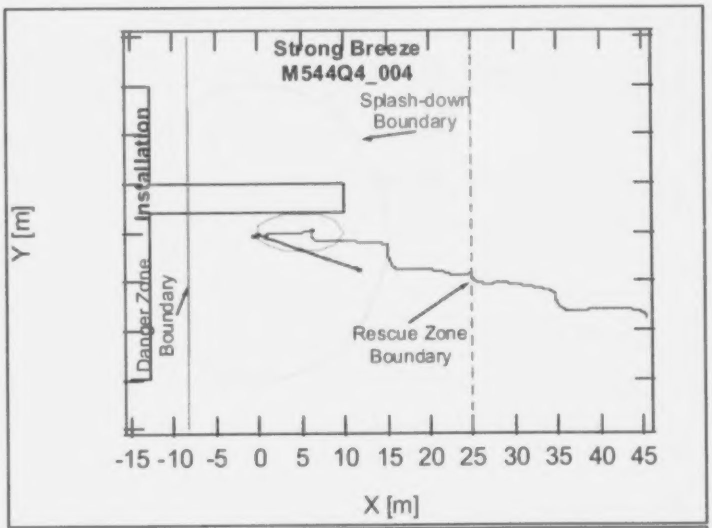
Y [m]


Strong Breeze
M544Q4_004
Splash-down
Boundary
Installation
Y [m]
Danger Zone
Boundary
Rescue Zone
Boundary
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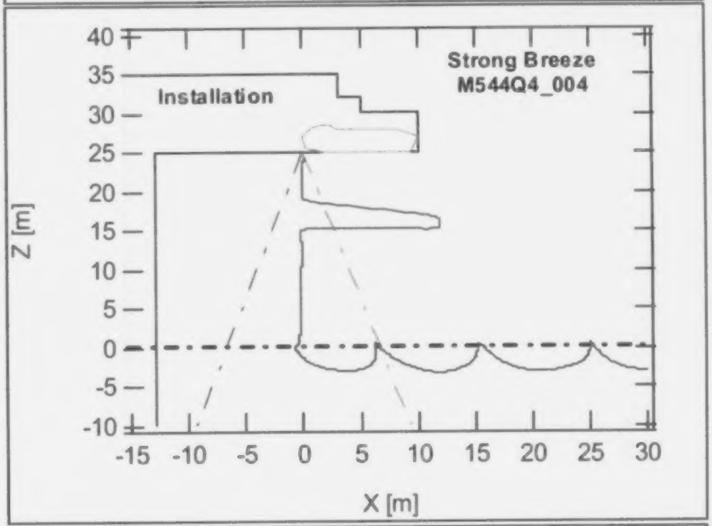
X [m]


Strong Breeze
M544Q4_004
Installation
Z [m]
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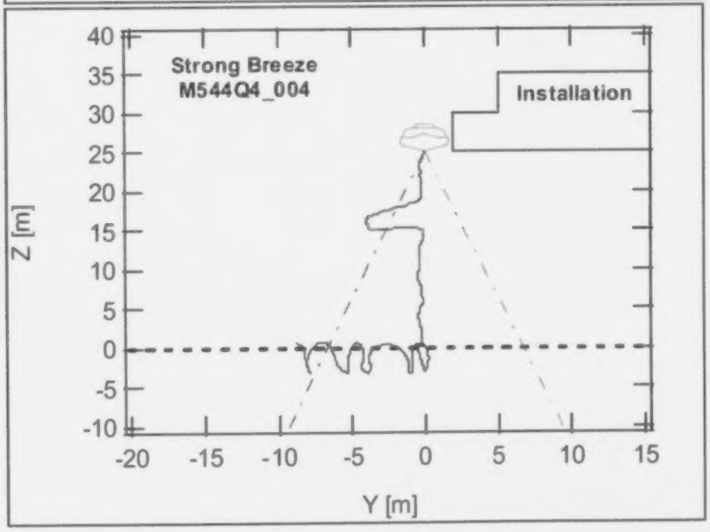
X [m]


Strong Breeze
M544Q4_004
Installation
Z [m]
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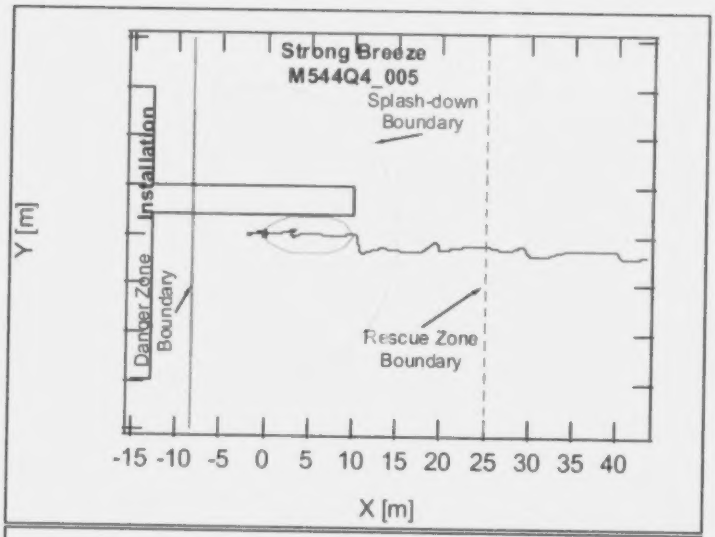
Y [m]


Strong Breeze
M544Q4_005
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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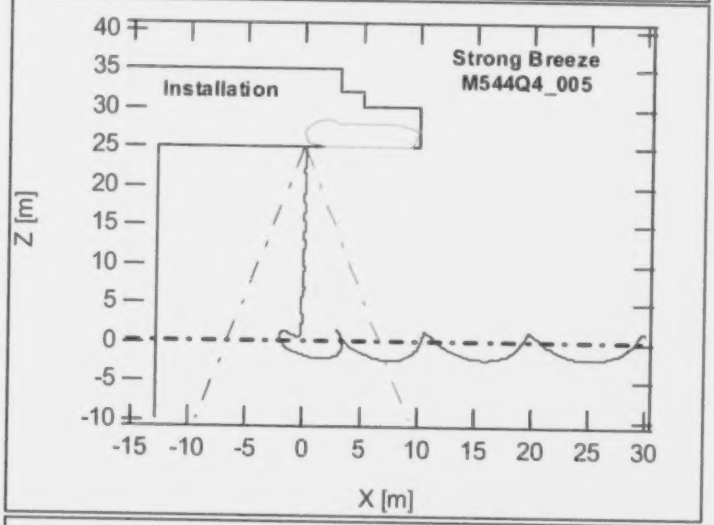
X [m]


Strong Breeze
M544Q4_005
Installation
Z [m]
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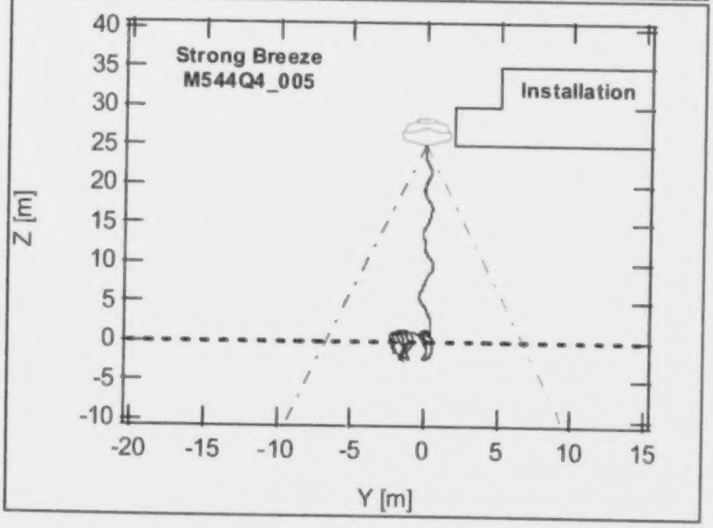
X [m]


Strong Breeze
M544Q4_005
Installation
Z [m]
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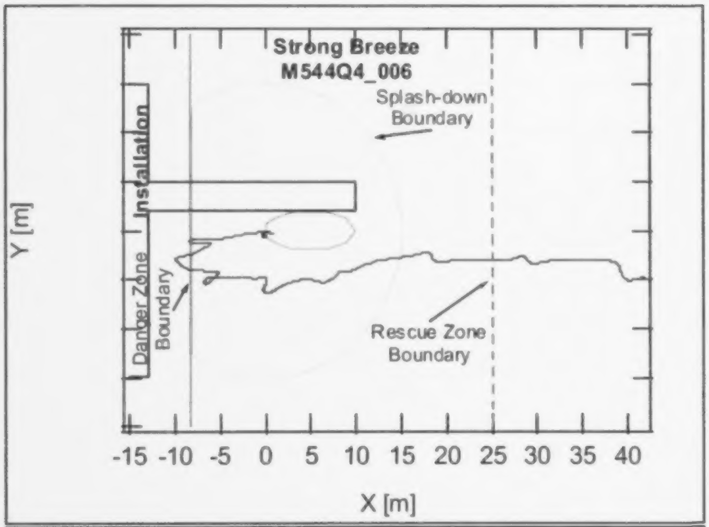
Y [m]


Strong Breeze
M544Q4_006
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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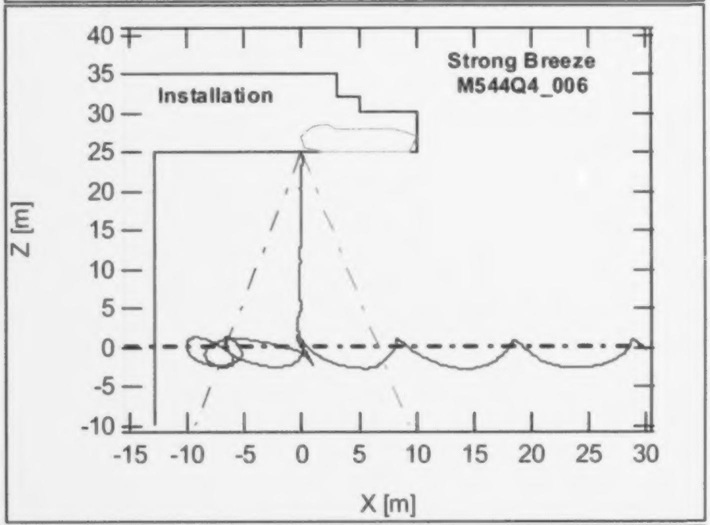
X [m]


Strong Breeze
M544Q4_006
Installation
Z [m]
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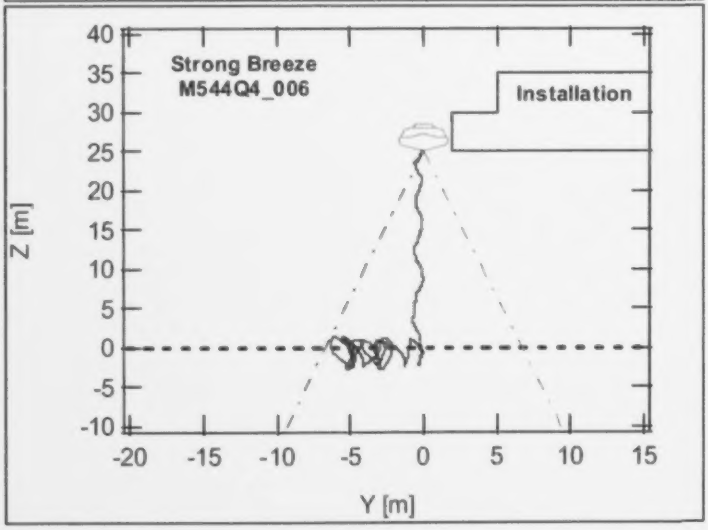
X [m]


Strong Breeze
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Installation
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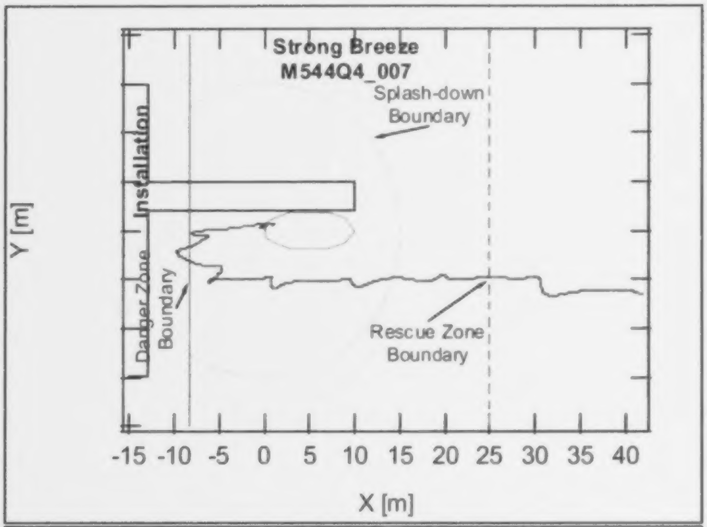
Strong Breeze
M544Q4_007
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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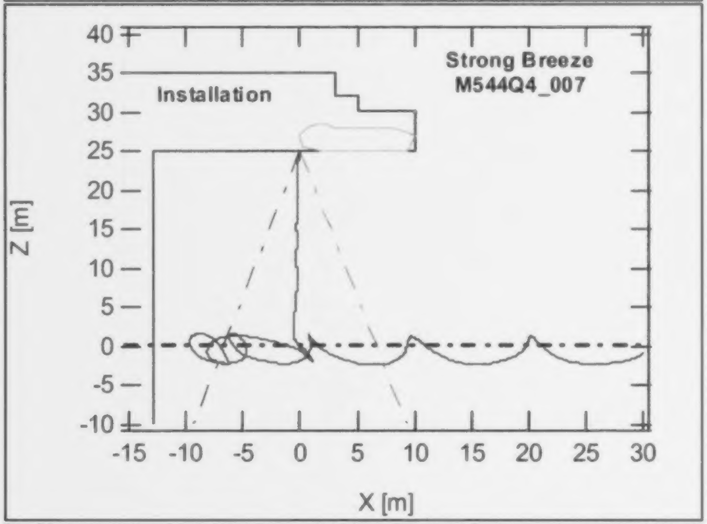
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M544Q4_007
Installation
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Z [m]
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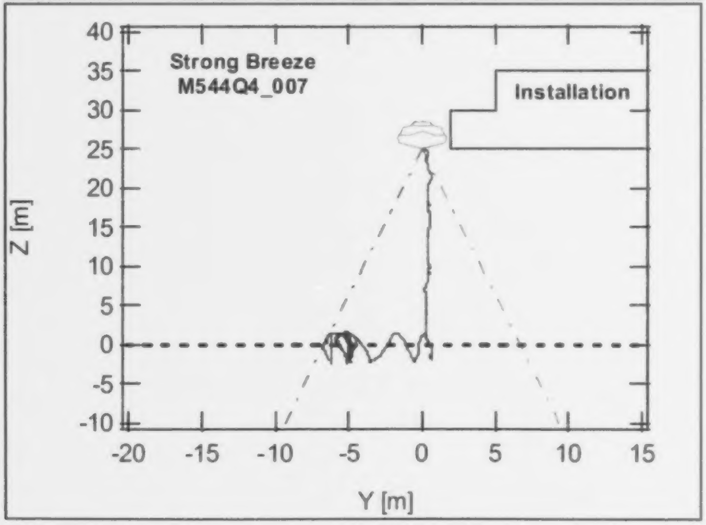
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Installation
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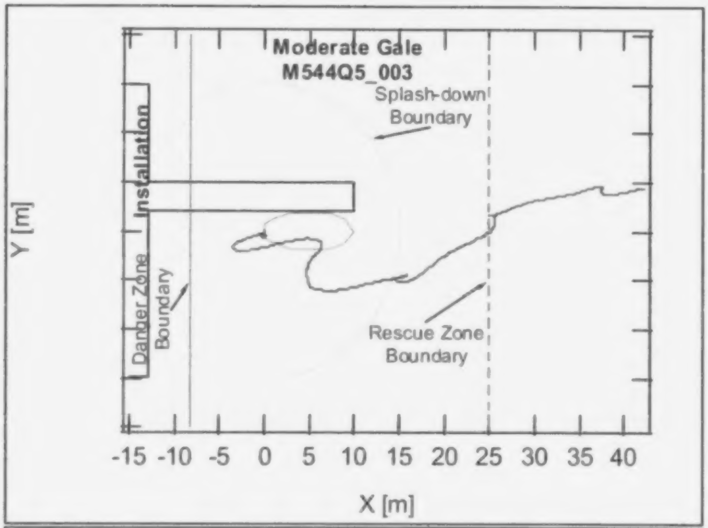
Y [m]


Moderate Gale
M544Q5_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
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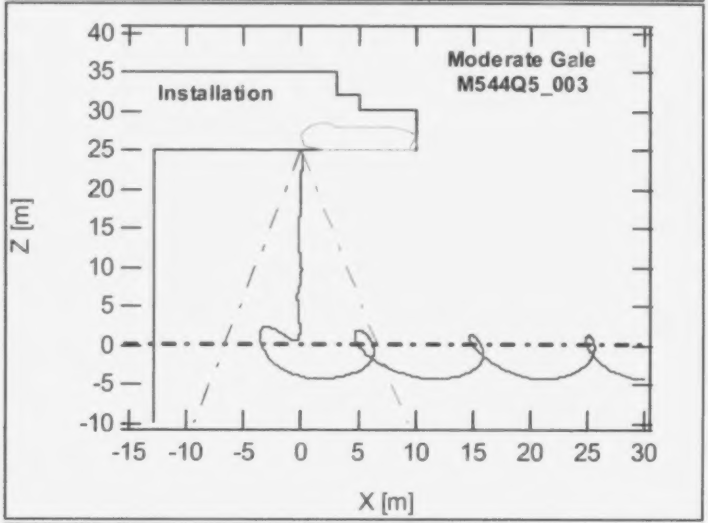
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Installation
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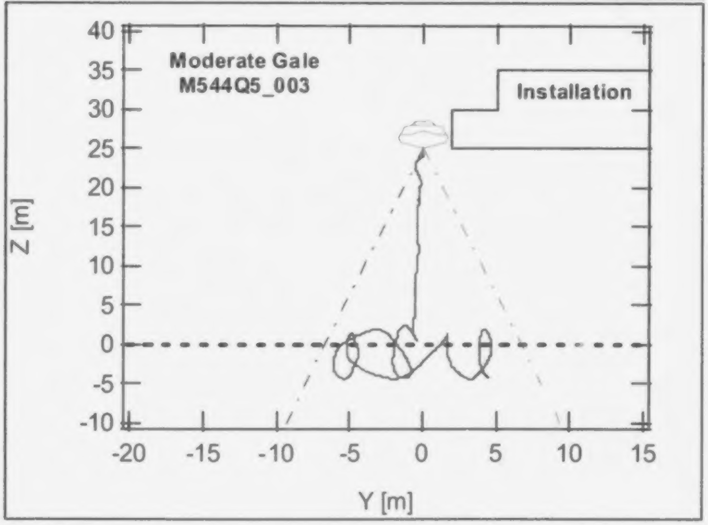
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Installation
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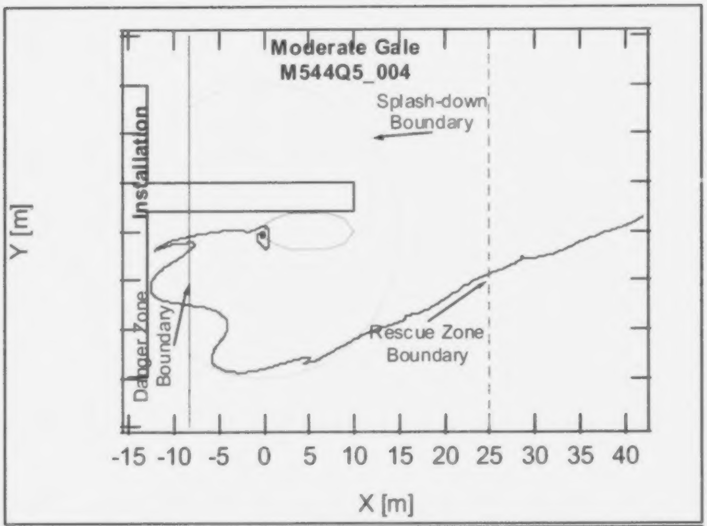
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Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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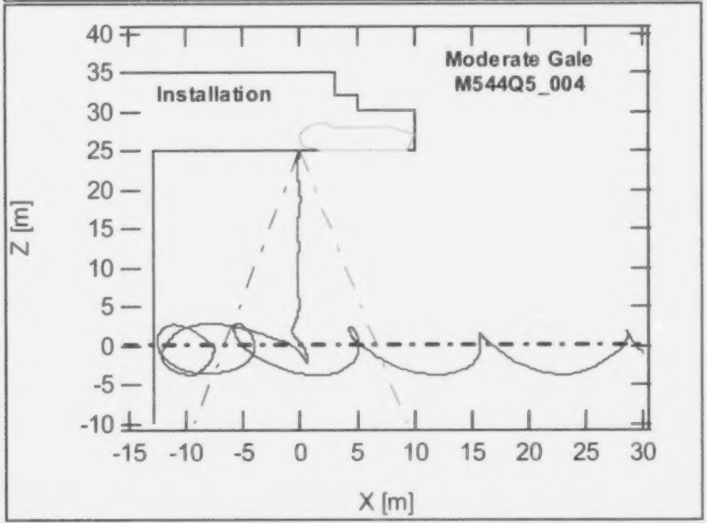
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Installation
Z [m]
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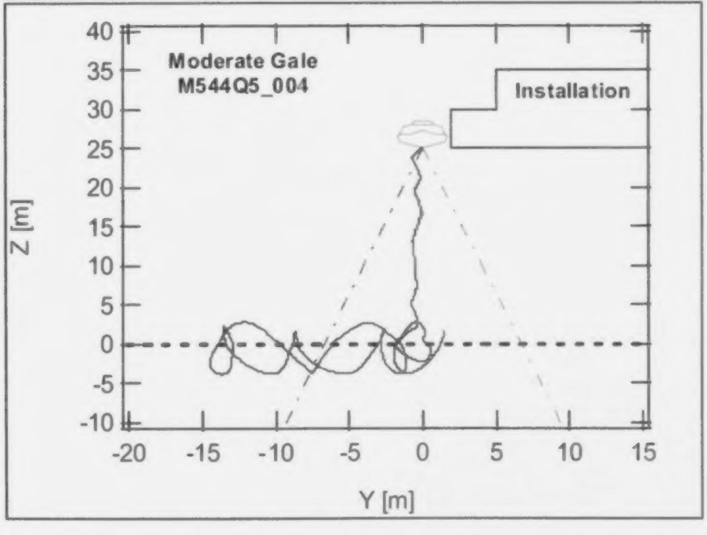
X [m]


Moderate Gale
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Installation
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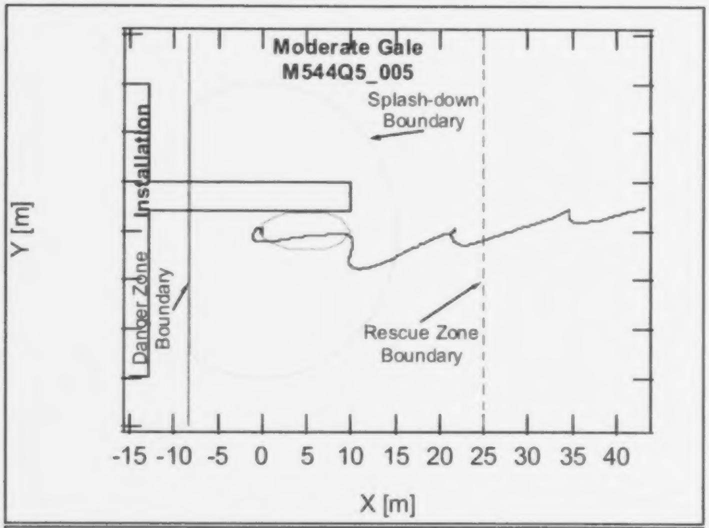
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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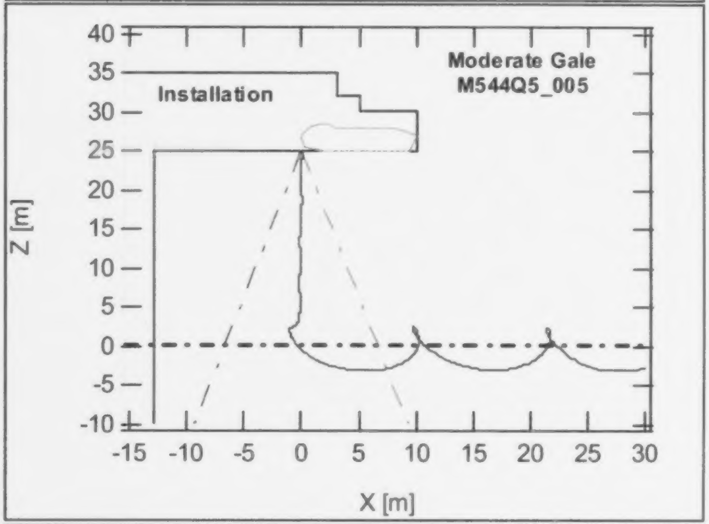
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Installation
Z [m]
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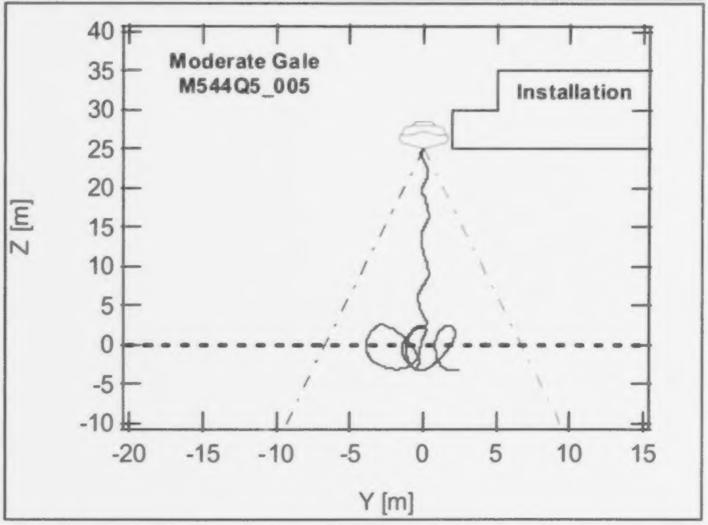
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Installation
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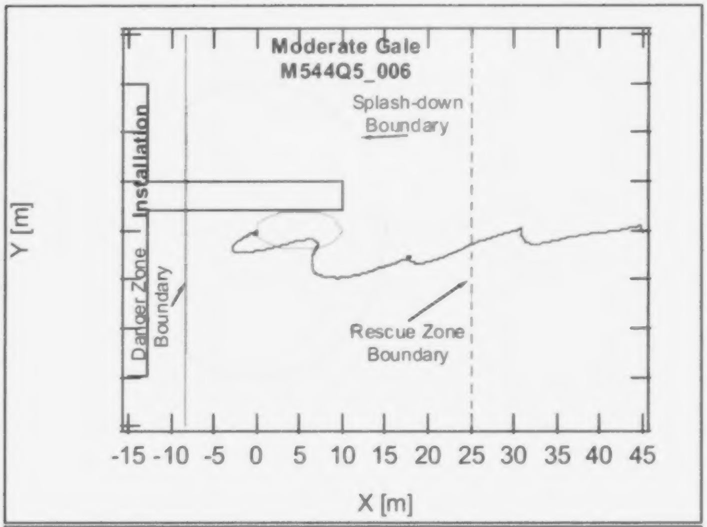
Moderate Gale
M544Q5_006
Splash-down Boundary
Installation
Danger Zone
Boundary
Rescue Zone Boundary
Y [m]
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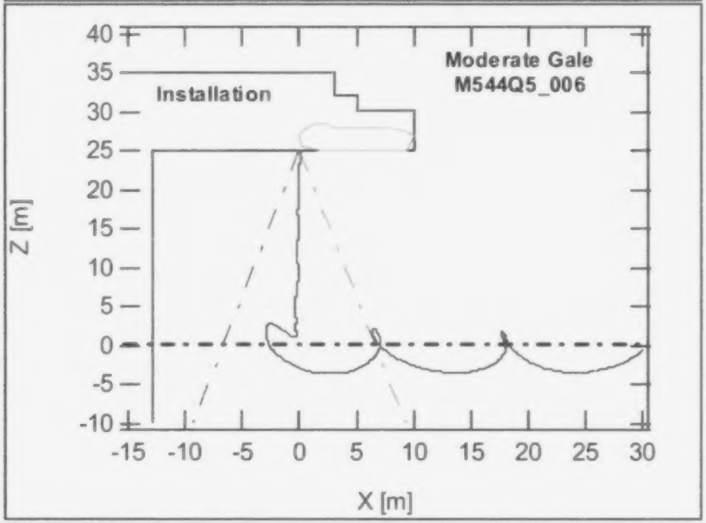
X [m]


Moderate Gale
M544Q5_006
Installation
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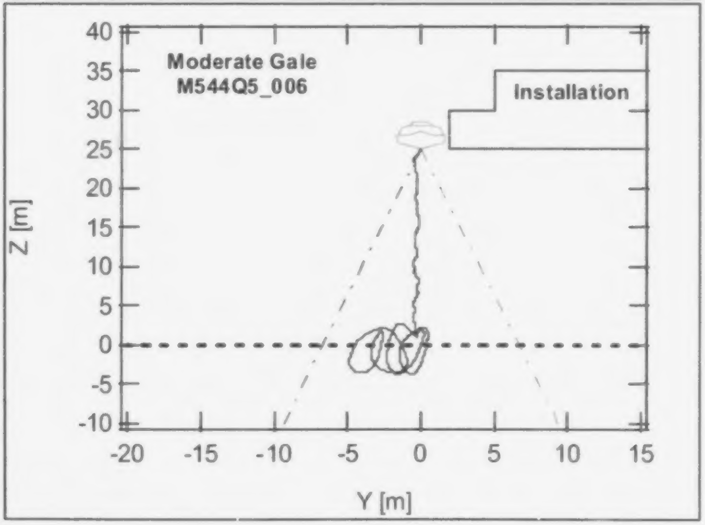
Moderate Gale
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Installation
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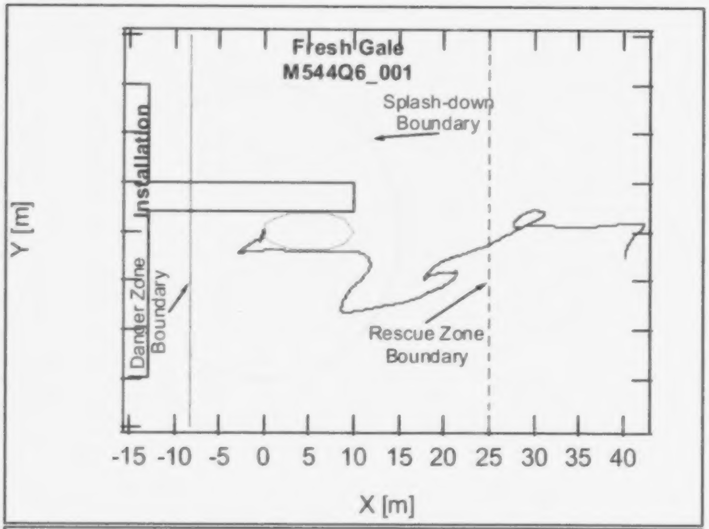
Fresh Gale
M544Q6_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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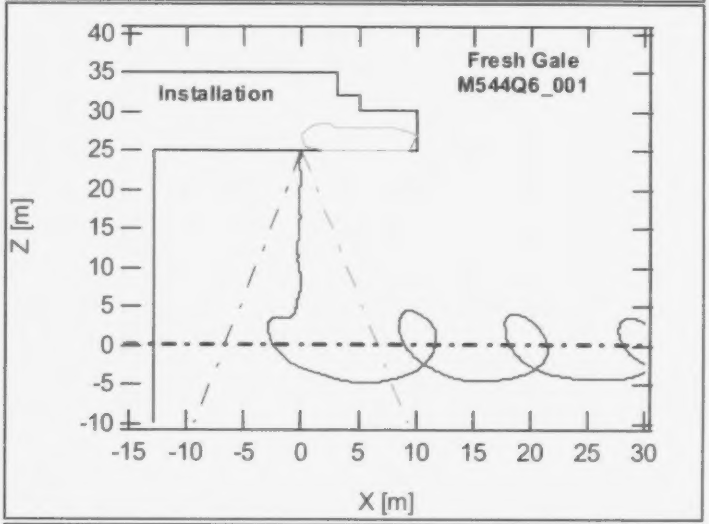
Fresh Gale
M544Q6_001
Installation
Z [m]
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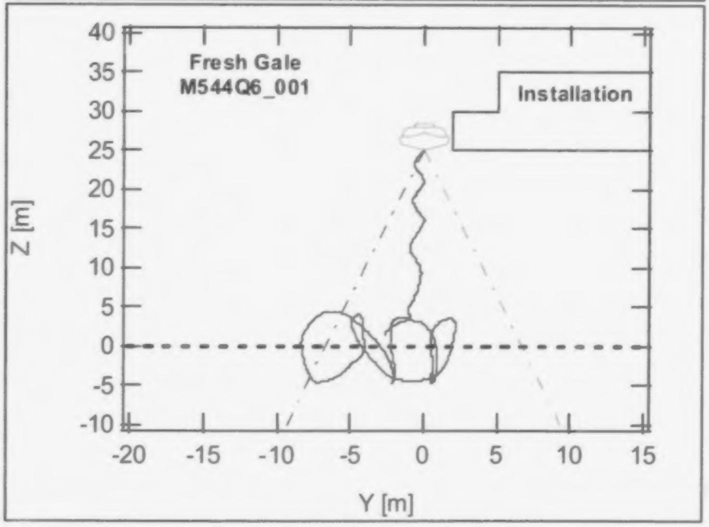
Fresh Gale
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Installation
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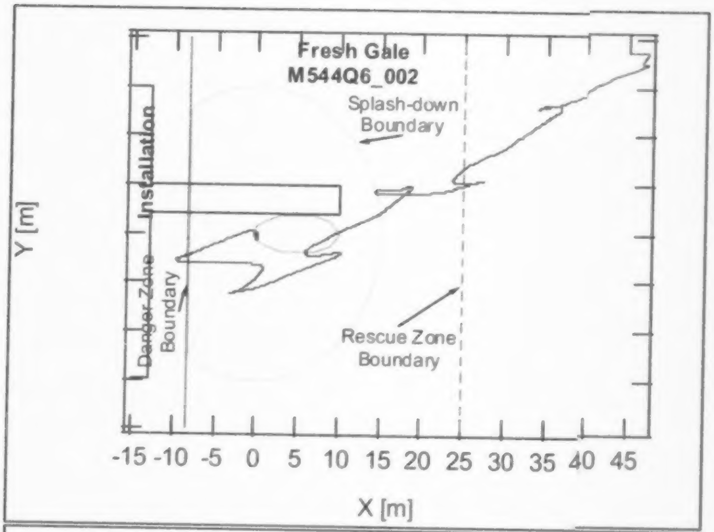
Fresh Gale
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Splash-down
Boundary
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Danger Zone
Boundary
Rescue Zone
Boundary
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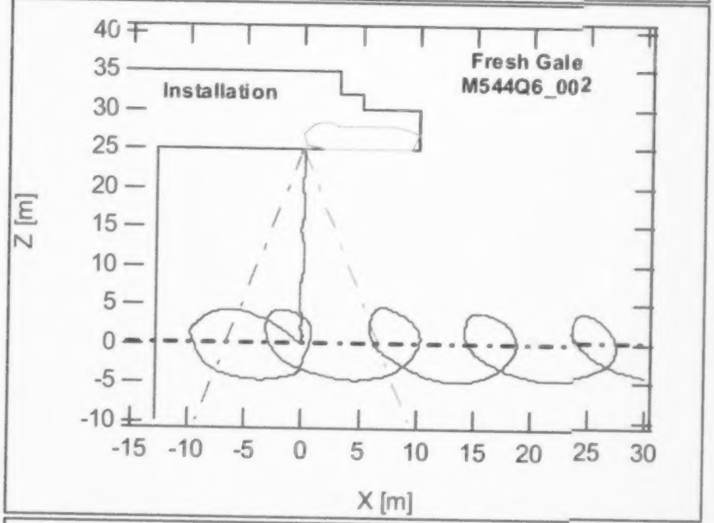
X [m]


Fresh Gale
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Installation
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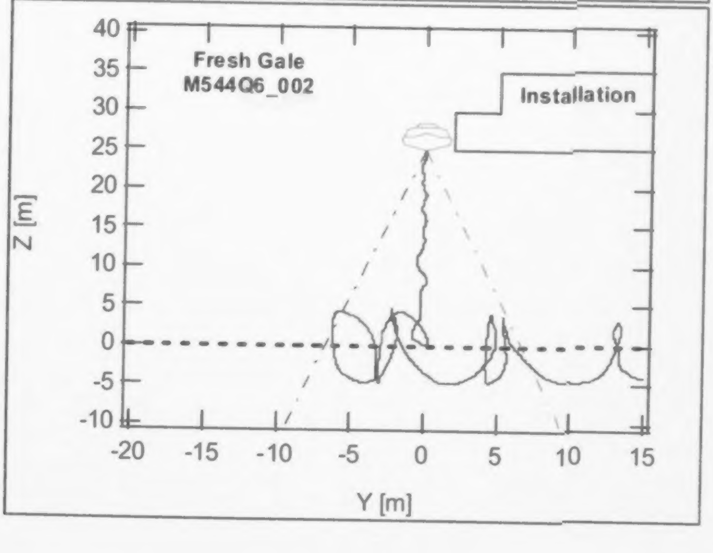
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Installation
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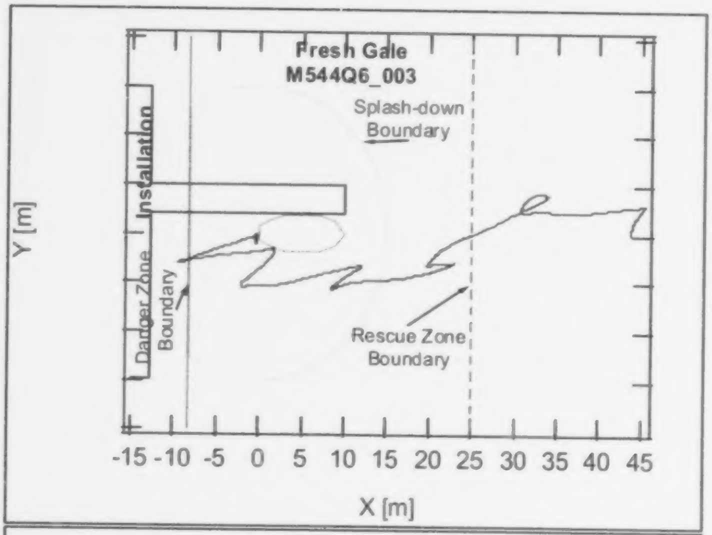
Fresh Gale
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Splash-down
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Danger Zone
Boundary
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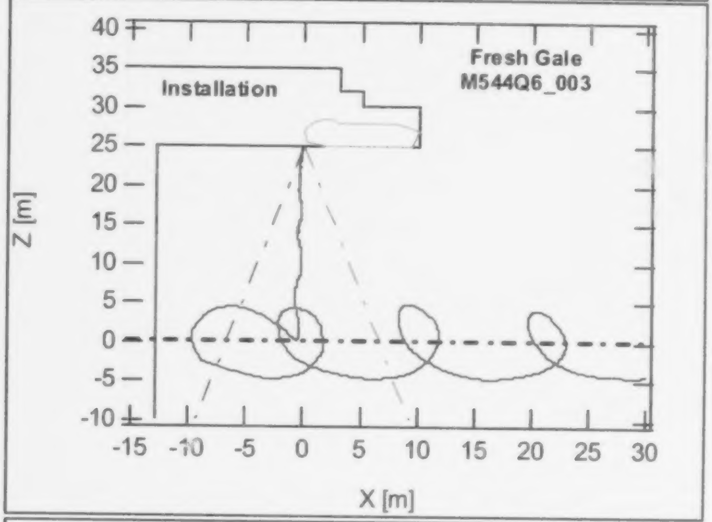
X [m]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Installation
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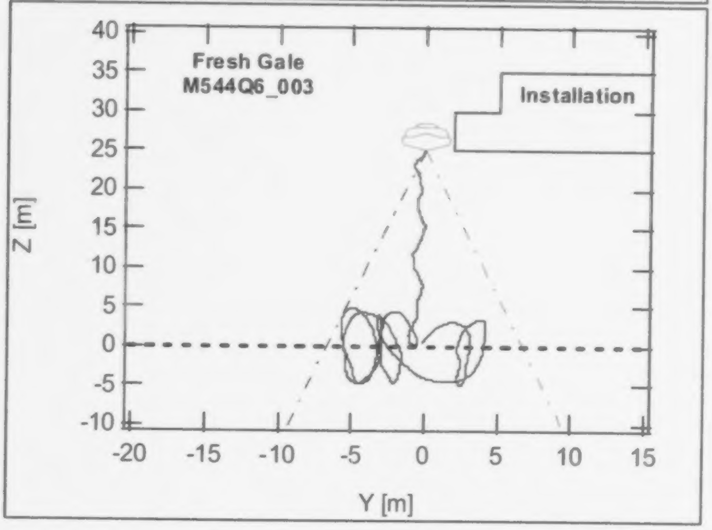
X [m]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Installation
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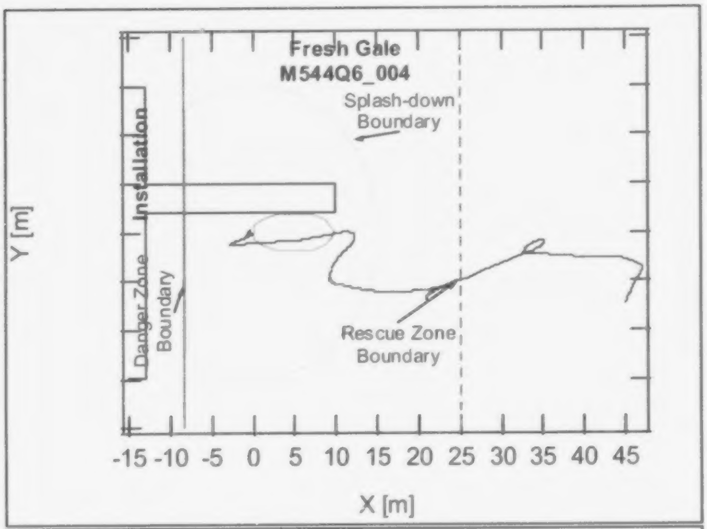
Y [m]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M544Q6_004
Splash-down
Boundary
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Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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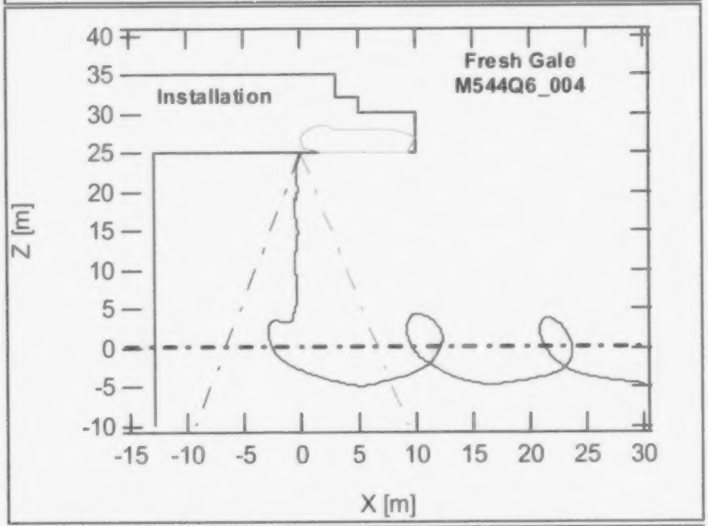
X [m]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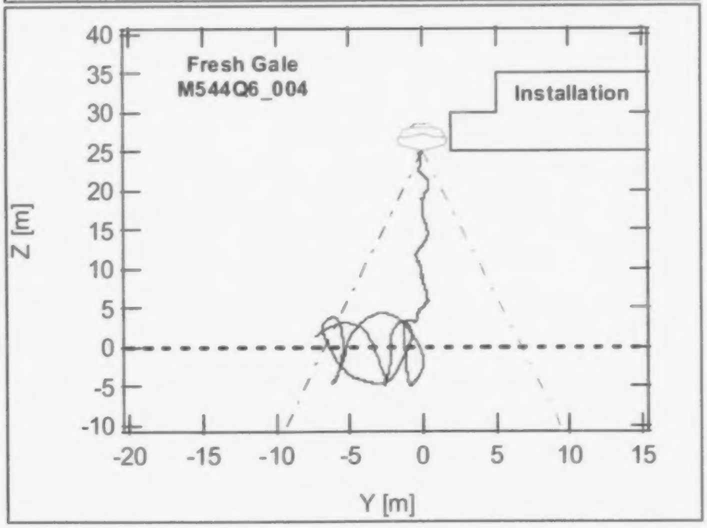
X [m]


Fresh Gale
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Installation
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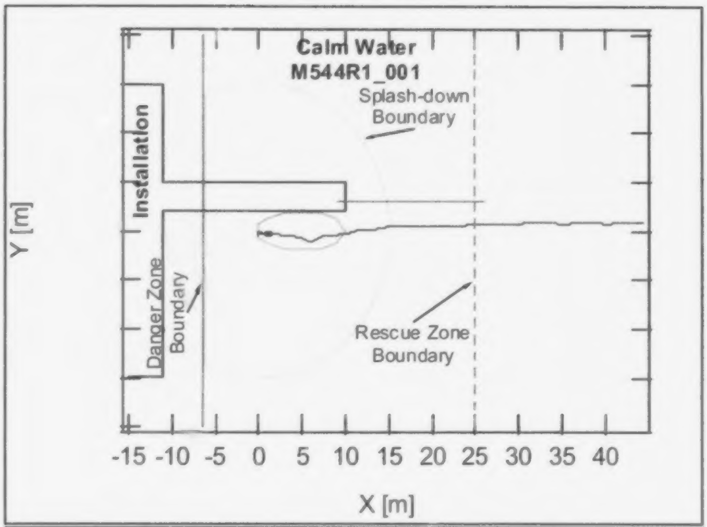
Y [m]


Calm Water
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Splash-down Boundary
Installation
Y [m]
Danger Zone Boundary
Rescue Zone Boundary
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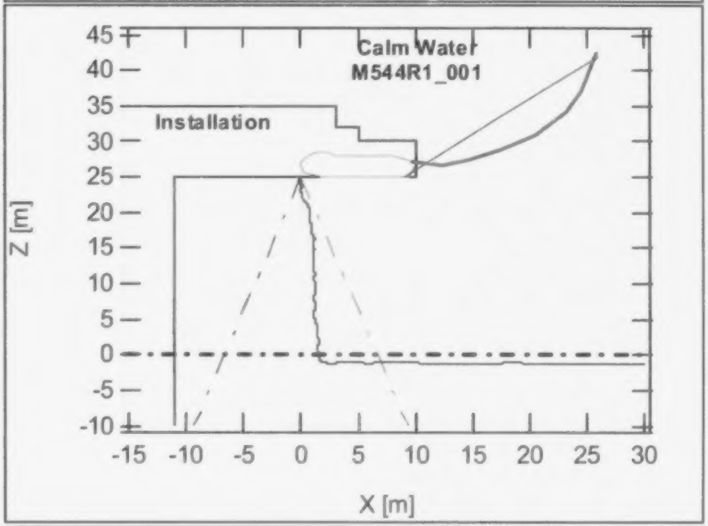
X [m]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Installation
Z [m]
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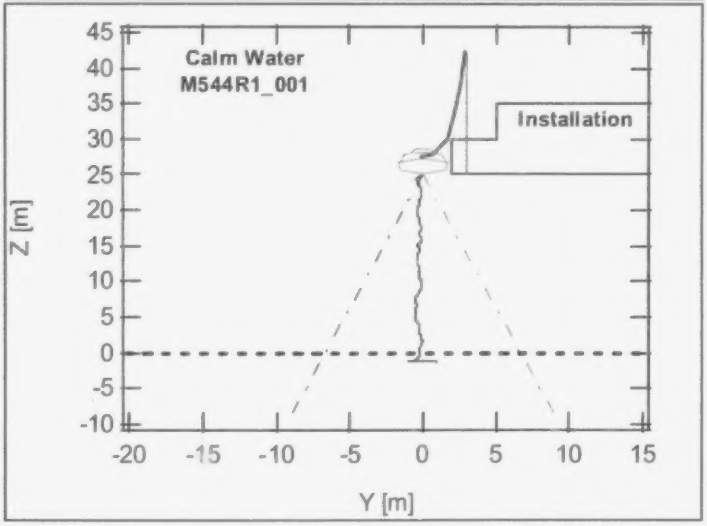
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Installation
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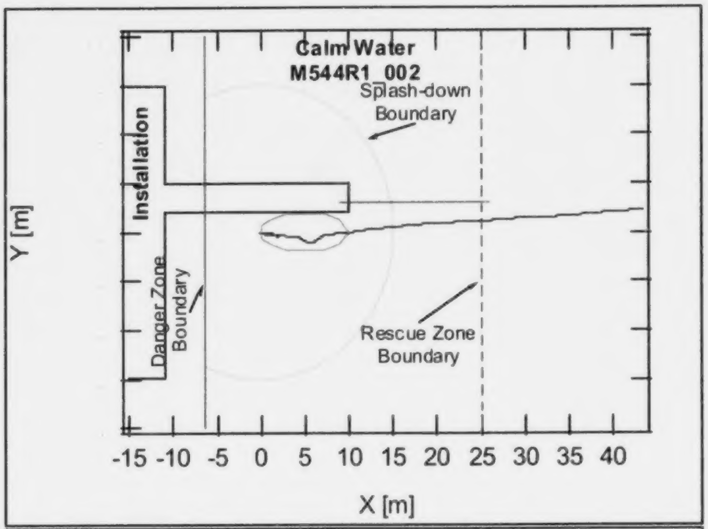
Calm Water
M544R1_002
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Boundary
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Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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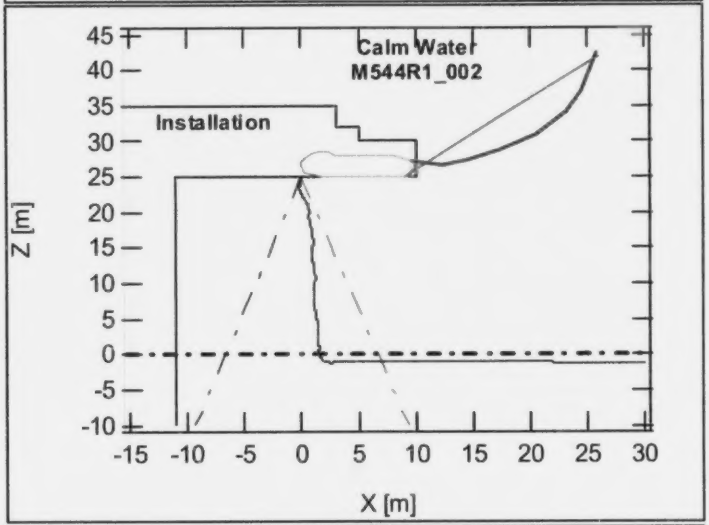
X [m]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Installation
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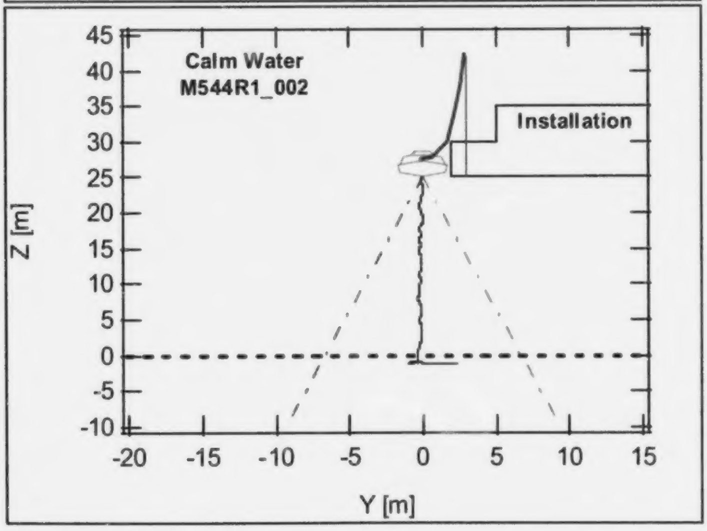
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Installation
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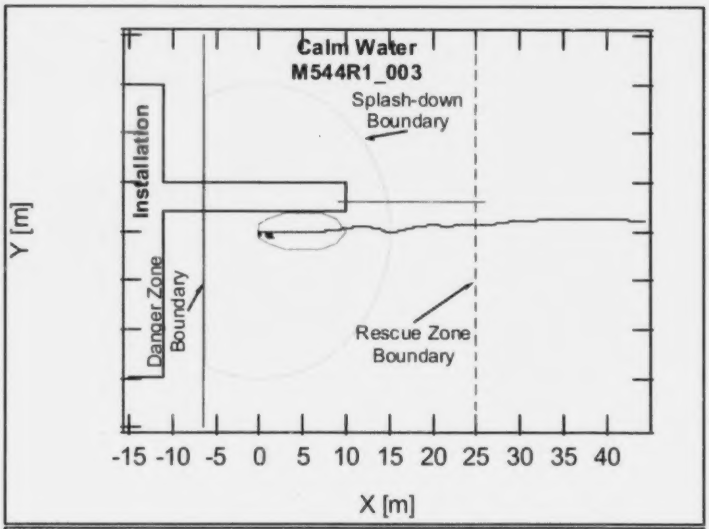
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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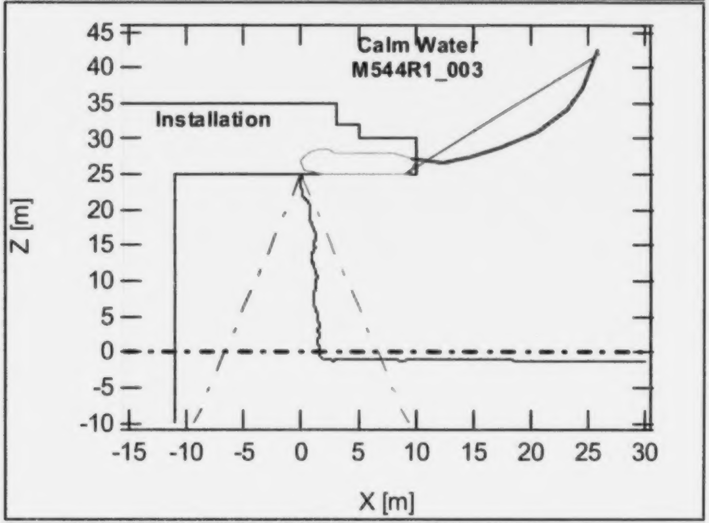
X [m]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Installation
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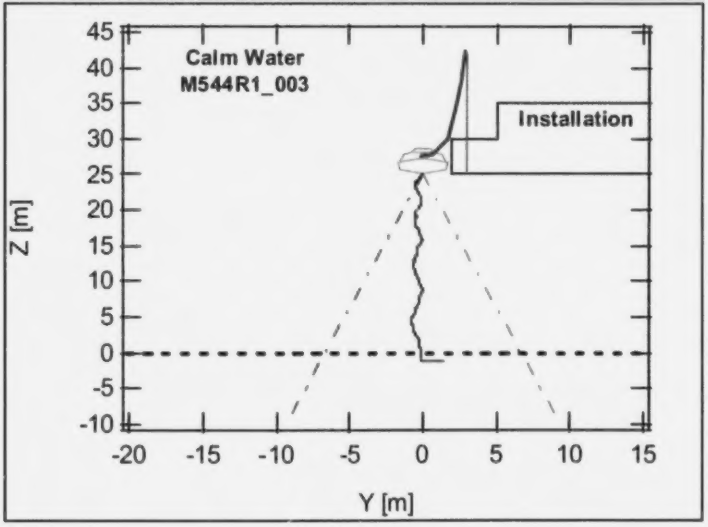
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Installation
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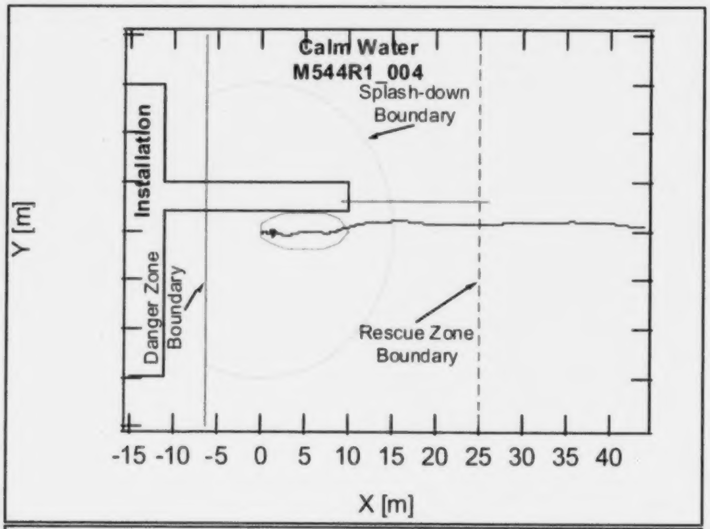
Calm Water
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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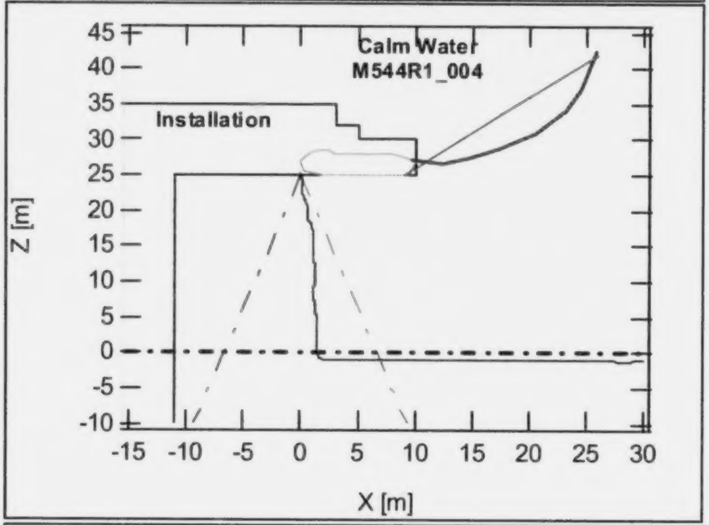
X [m]


Calm Water
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Installation
Z [m]
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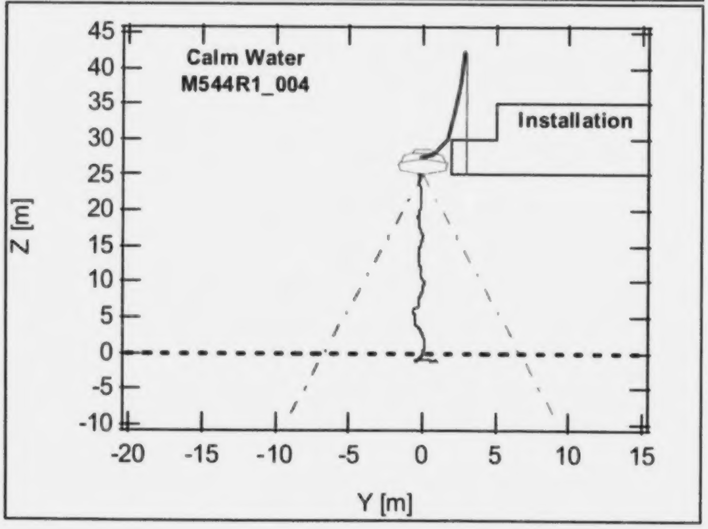
Calm Water
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Installation
Z [m]
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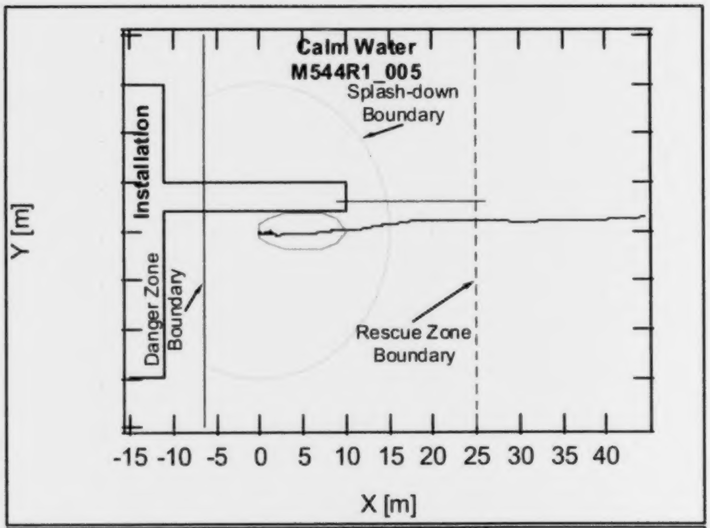
Y [m]


Calm Water
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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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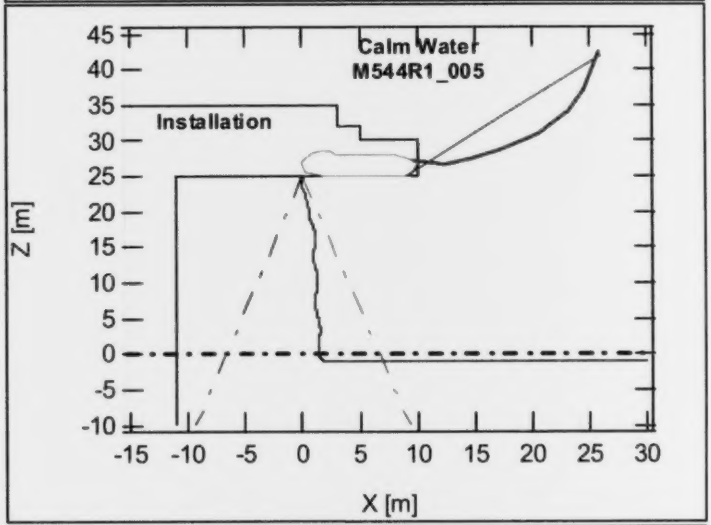
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Installation
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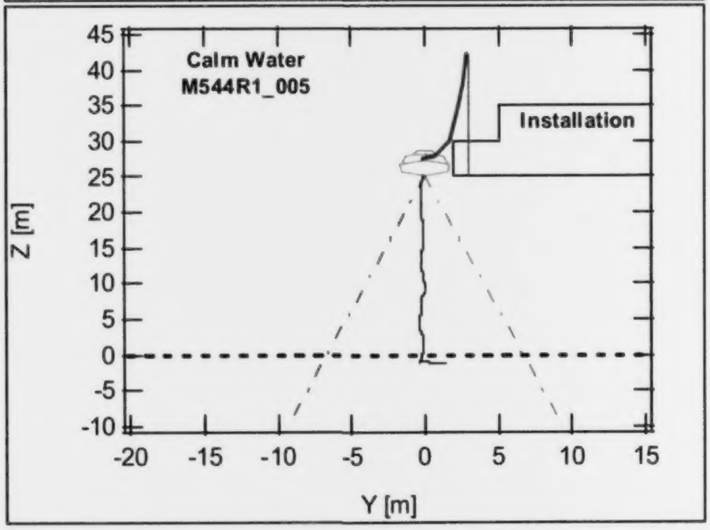
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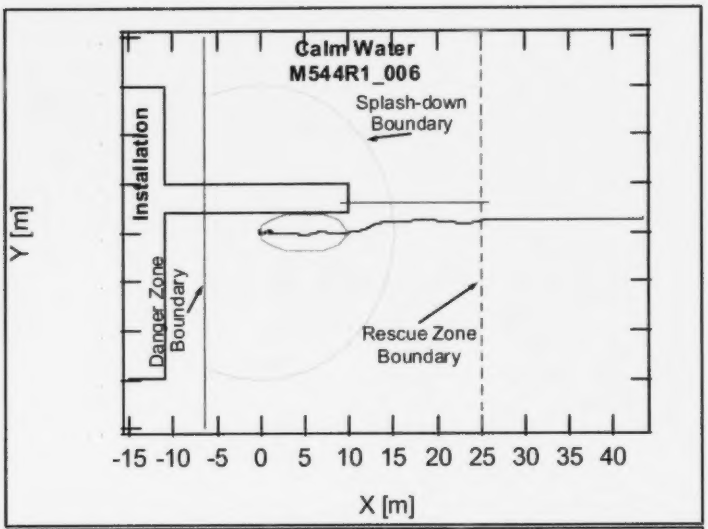
Calm Water
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Splash-down
Boundary
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Danger Zone
Boundary
Rescue Zone
Boundary
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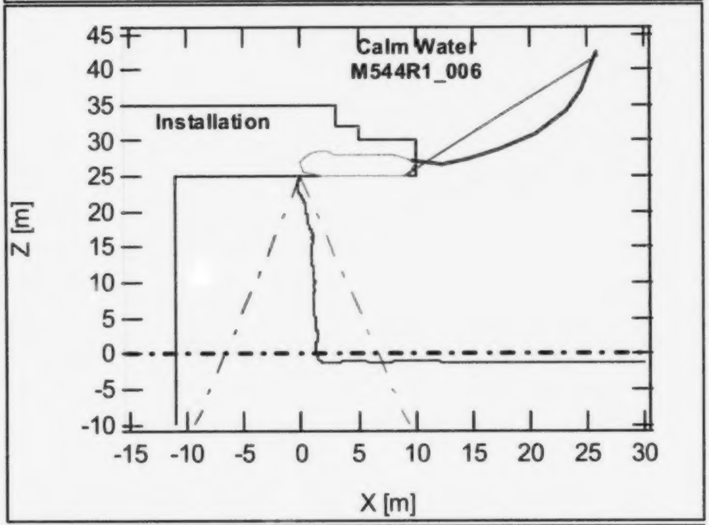
Calm Water
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Installation
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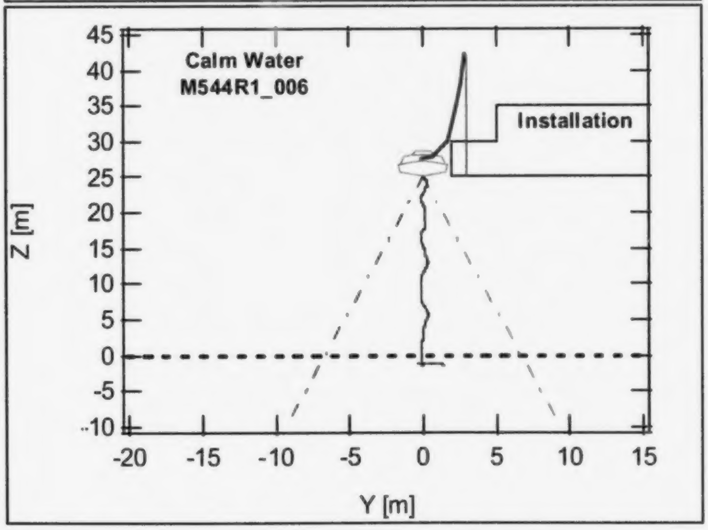
Z [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Calm Water
M544R1_006
Installation
45
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0
-5
-10
Z [m]
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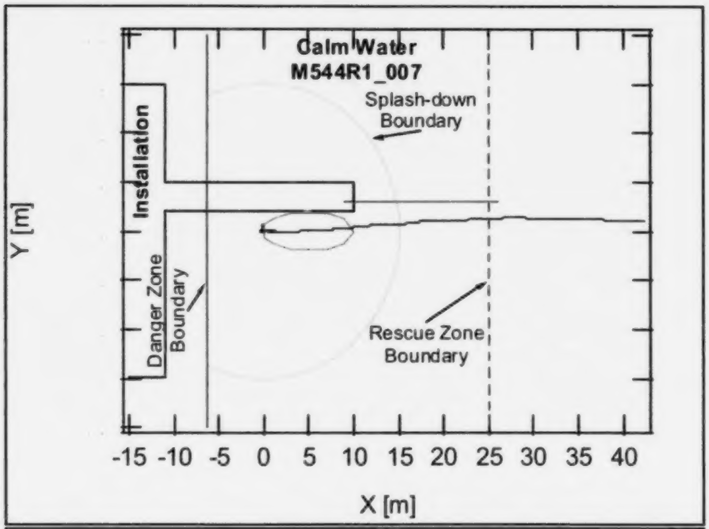
Y [m]


Calm Water
M544R1_007
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
X [m]
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-5
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35
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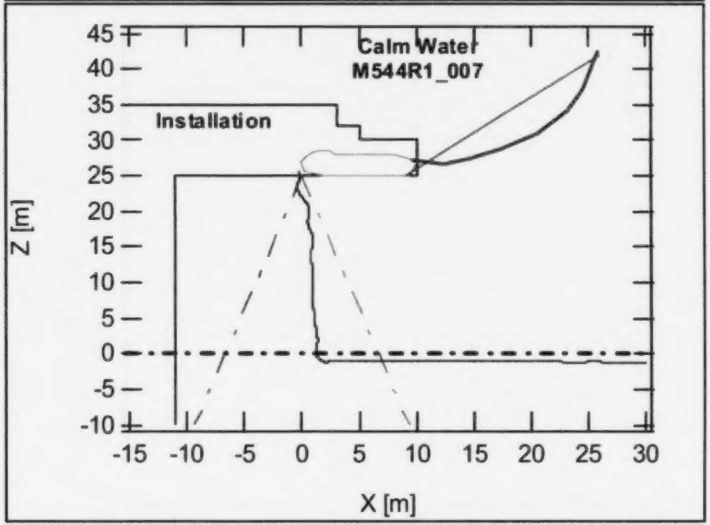
Calm Water
M544R1_007
Installation
Z [m]
X [m]
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40
35
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-5
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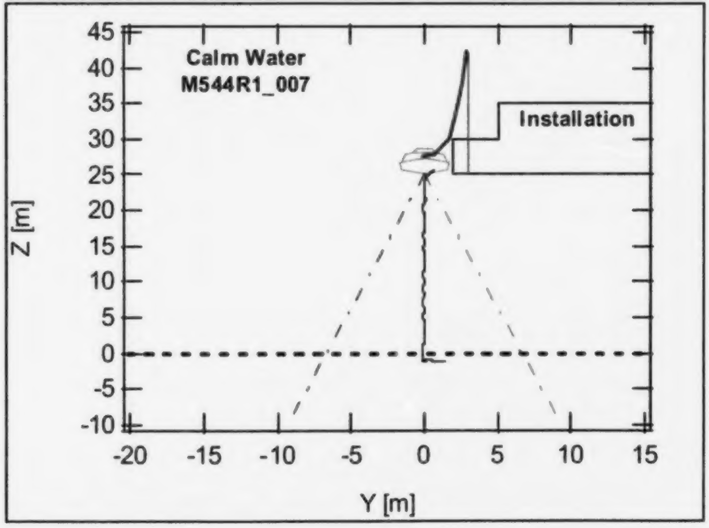
Calm Water
M544R1_007
Installation
Z [m]
Y [m]
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-5
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-15
-10
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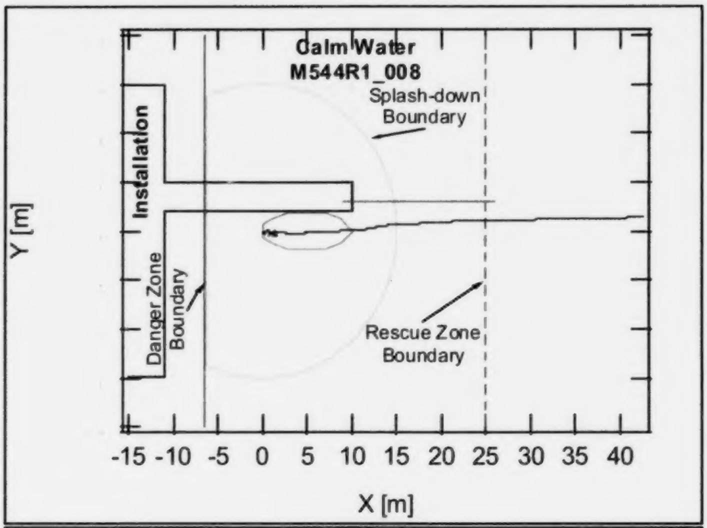
Calm Water
M544R1_008
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
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-15
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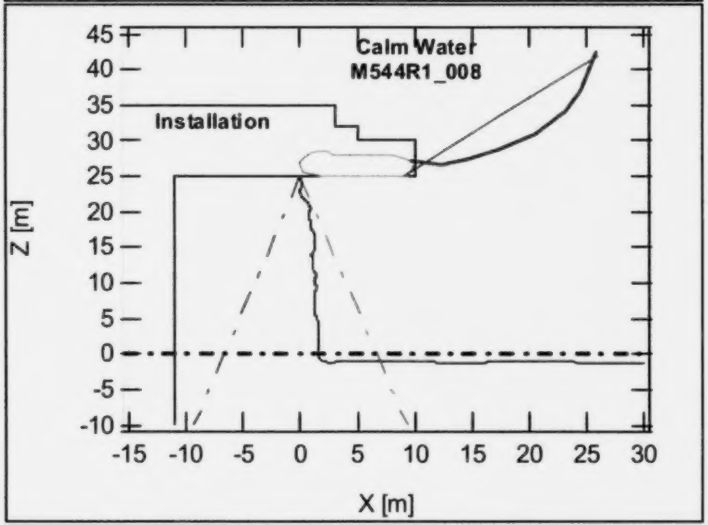
35
40
X [m]


Calm Water
M544R1_008
Installation
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20
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Z [m]
-15
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-5
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5
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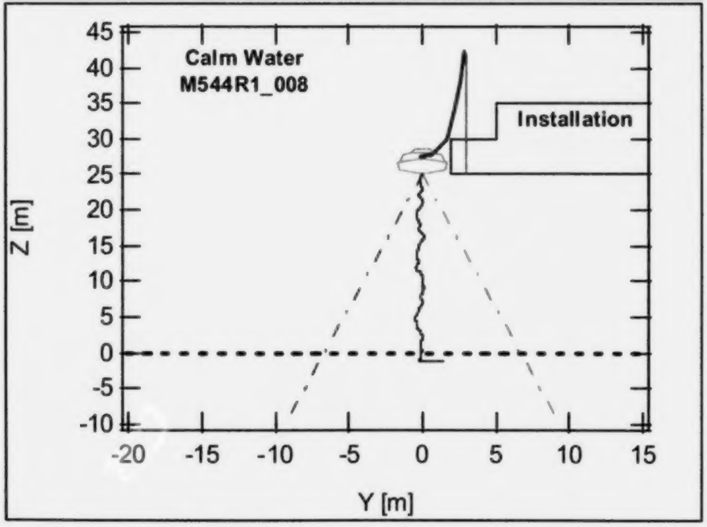
20
25
30
X [m]


Calm Water
M544R1_008
Installation
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Z [m]
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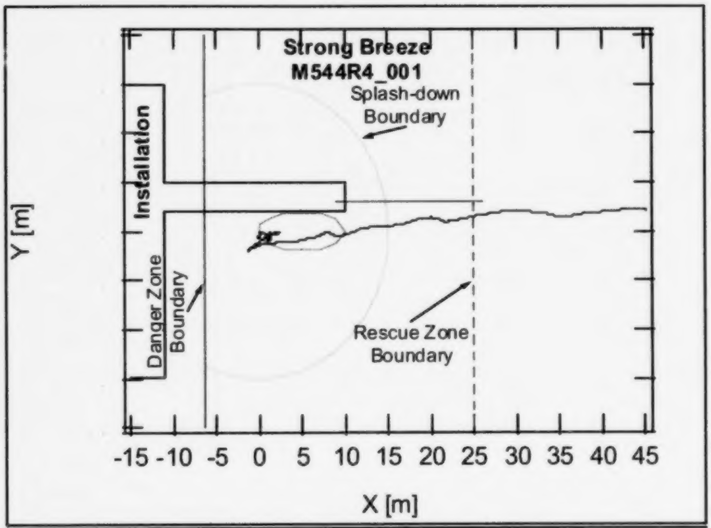
Y [m]


Strong Breeze
M544R4_001
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15
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20
25
30
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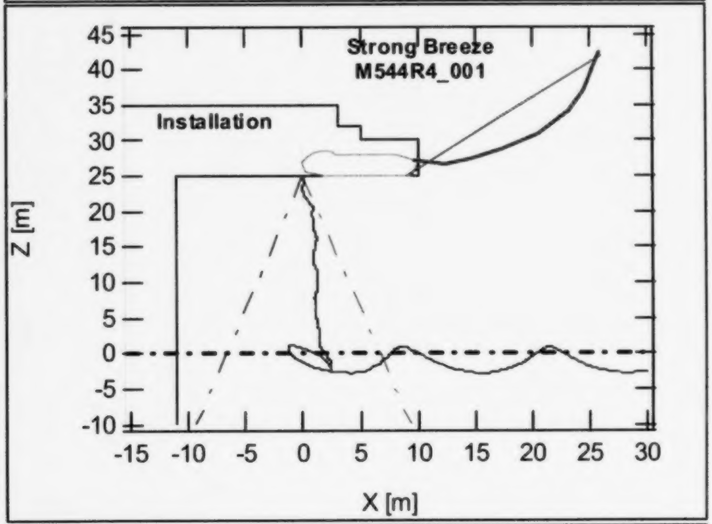
40
45
X [m]


Strong Breeze
M544R4_001
Installation
45
40
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-5
-10
Z [m]
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-5
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25
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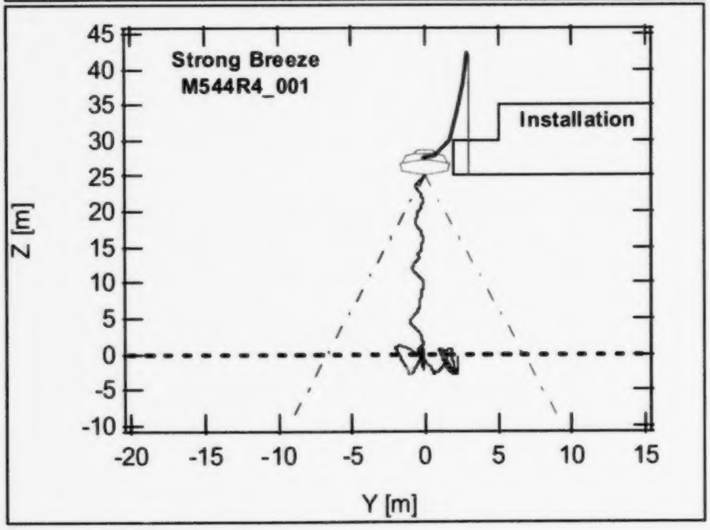
X [m]


Strong Breeze
M544R4_001
Installation
45
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-5
-10
Z [m]
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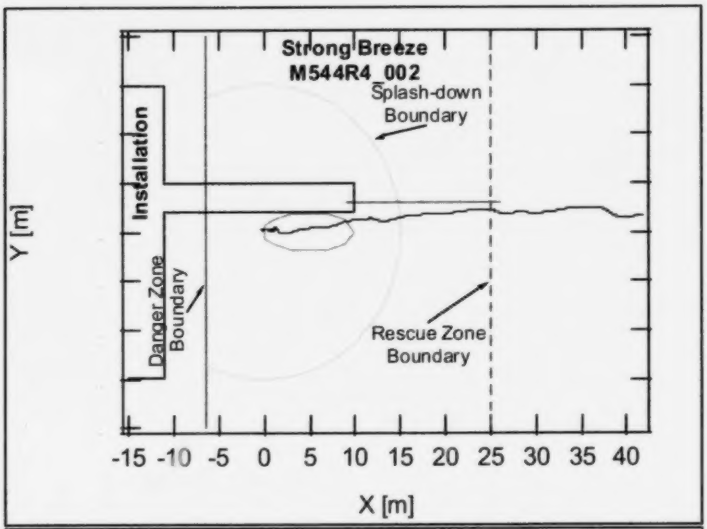
Y [m]


Strong Breeze
M544R4_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15
-10
-5
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35
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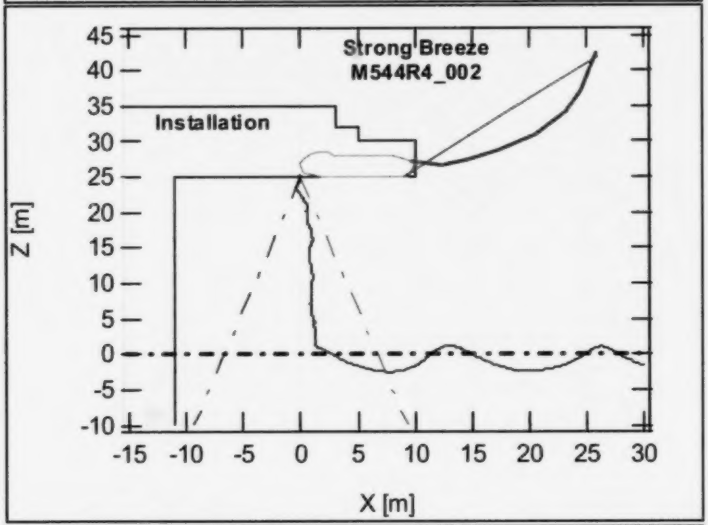
X [m]


Strong Breeze
M544R4_002
Installation
Z [m]
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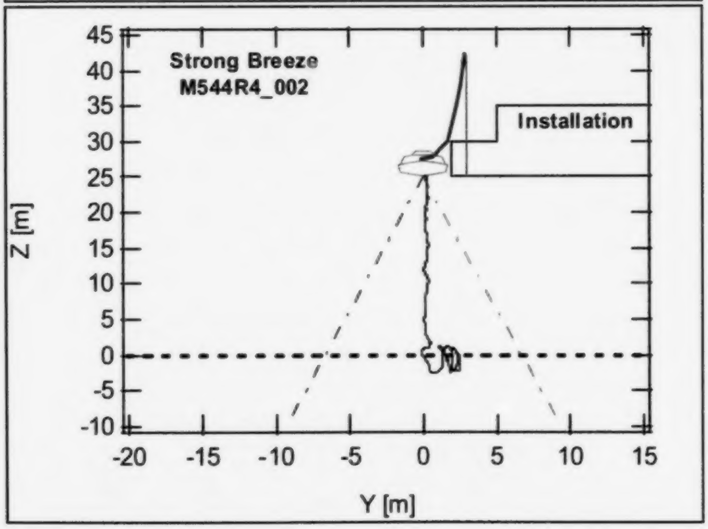
X [m]


Strong Breeze
M544R4_002
Installation
Z [m]
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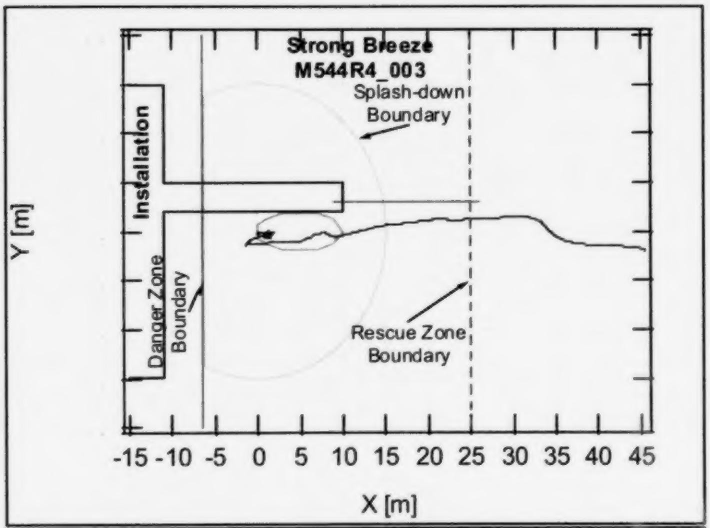
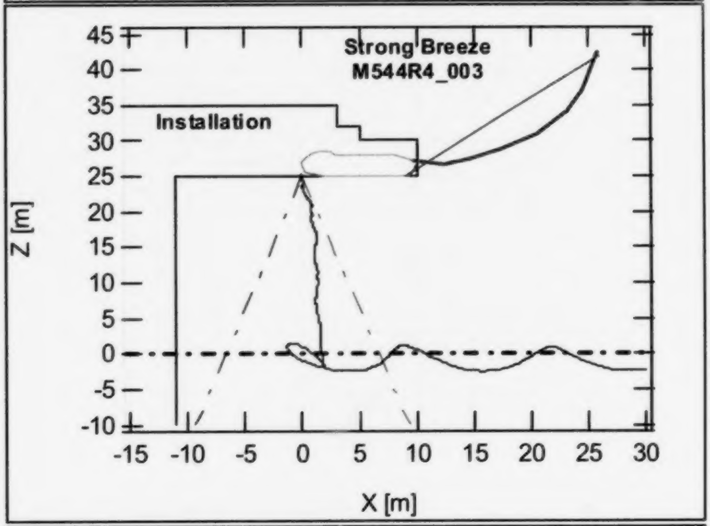
Y [m]


Strong Breeze
M544R4_003
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40 45
X [m]


Strong Breeze
M544R4_003
Installation
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-5
-10
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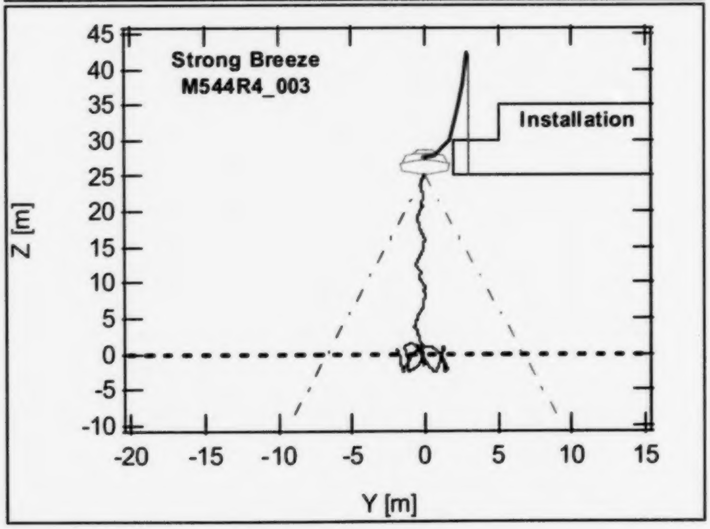
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Strong Breeze
M544R4_003
Installation
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-5
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Z [m]
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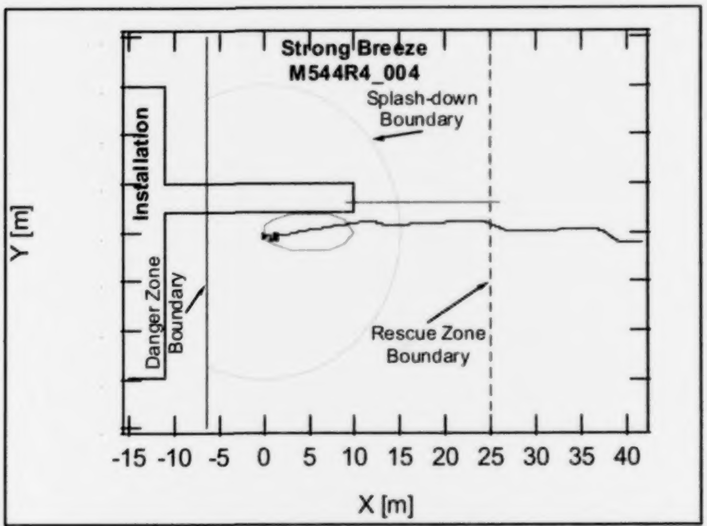
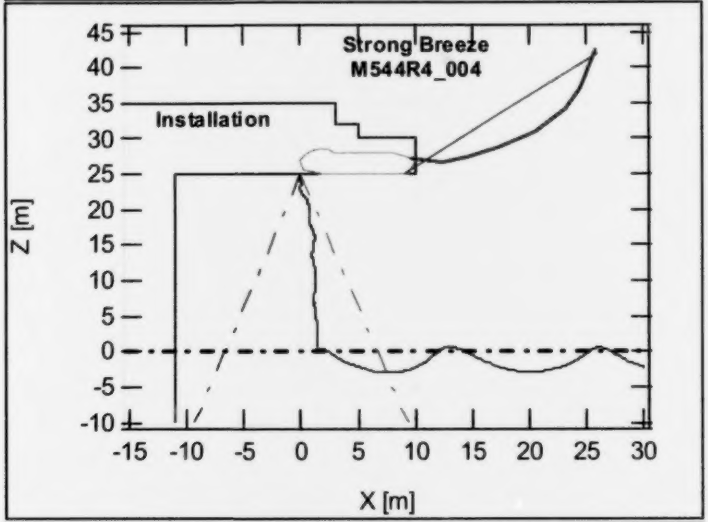
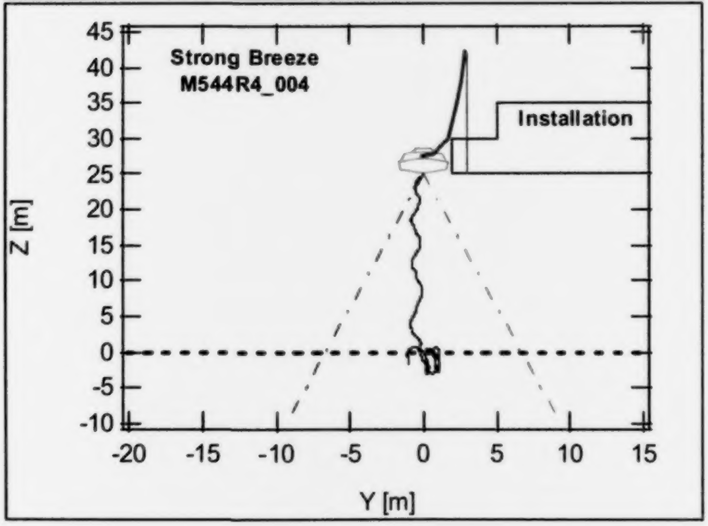
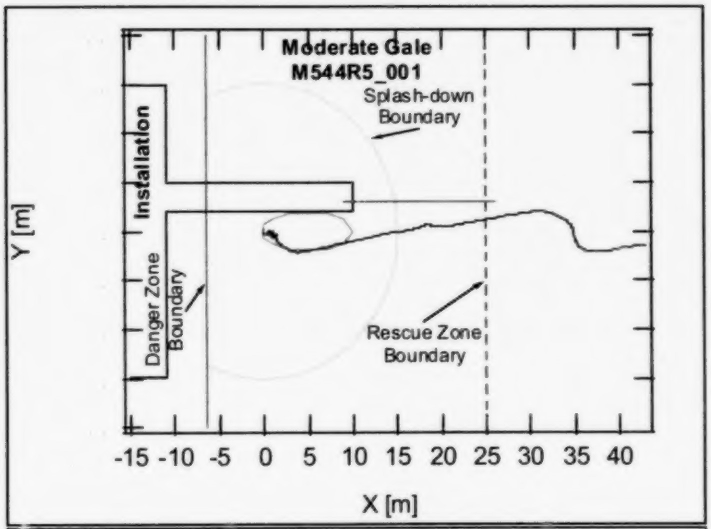
Y [m]


Strong Breeze
M544R4_004
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Strong Breeze
M544R4_004
Installation
Z [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Strong Breeze
M544R4_004
Installation
Z [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-20 -15 -10 -5 0 5 10 15
Y [m]


Moderate Gale
M544R5_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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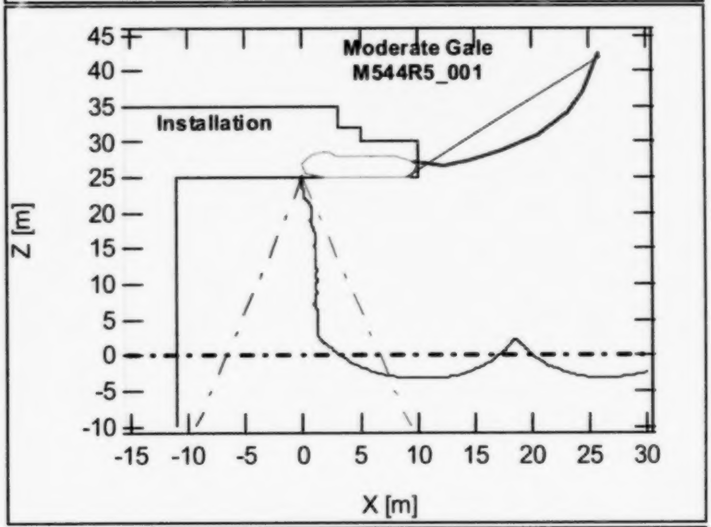
X [m]


Moderate Gale
M544R5_001
Installation
Z [m]
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-10
-5
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25
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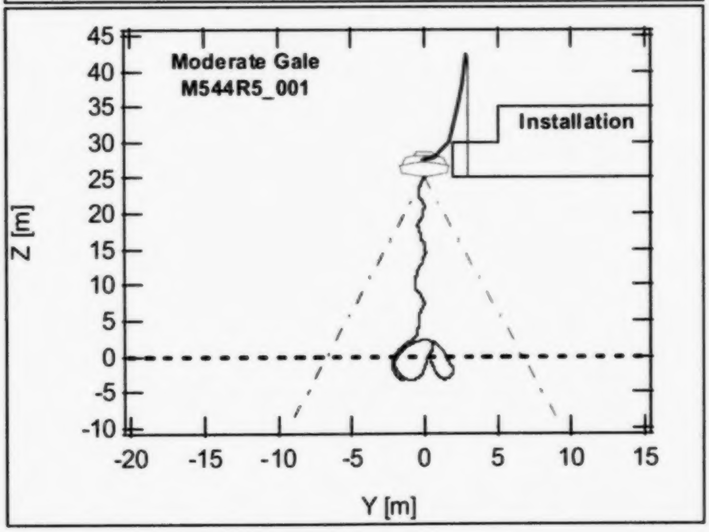
X [m]


Moderate Gale
M544R5_001
Installation
Z [m]
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-20
-15
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-5
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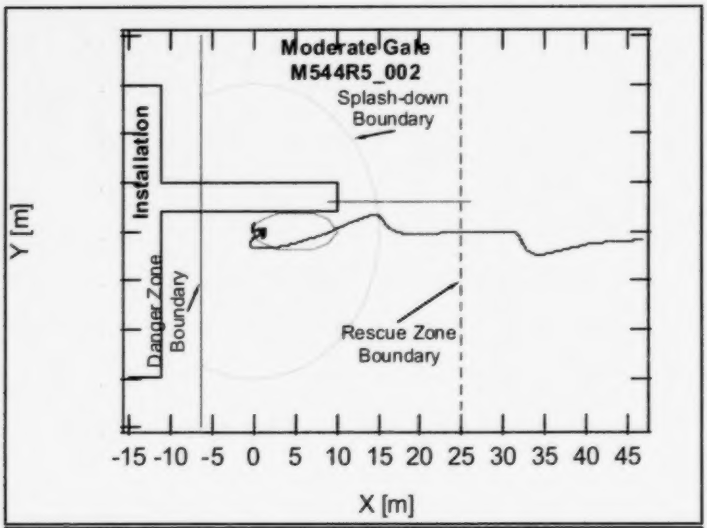
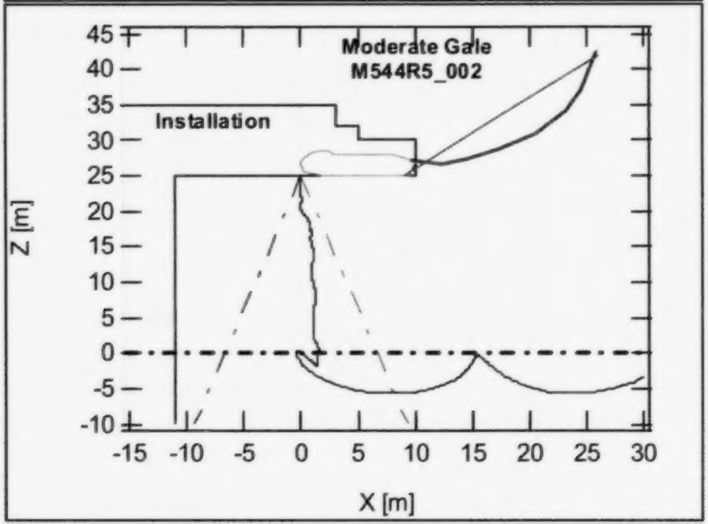
Y [m]


Moderate Gale
M544R5_002
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40 45
X [m]


Moderate Gale
M544R5_002
Installation
Z [m]
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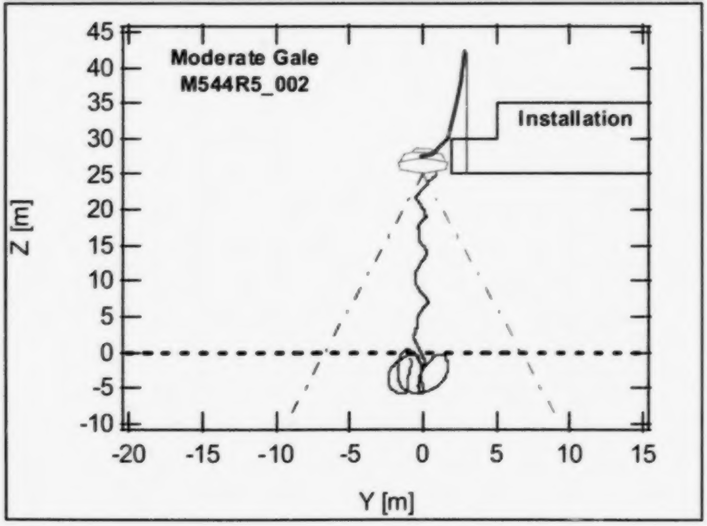
-15 -10 -5 0 5 10 15 20 25 30
X [m]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Installation
Z [m]
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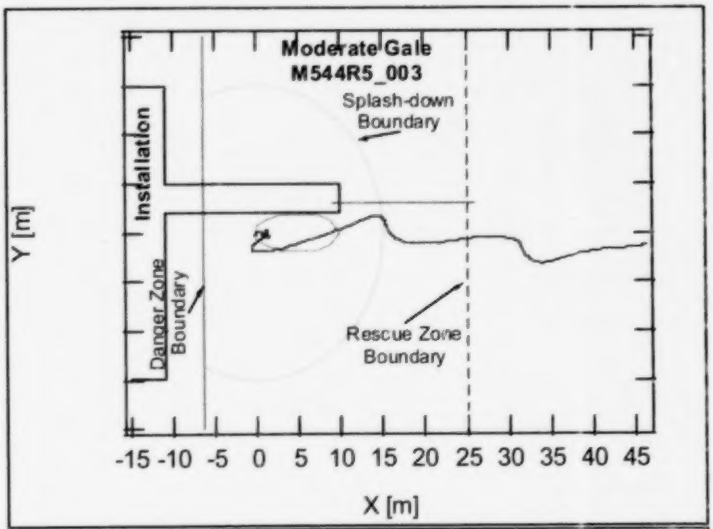
Y [m]


Moderate Gale
M544R5_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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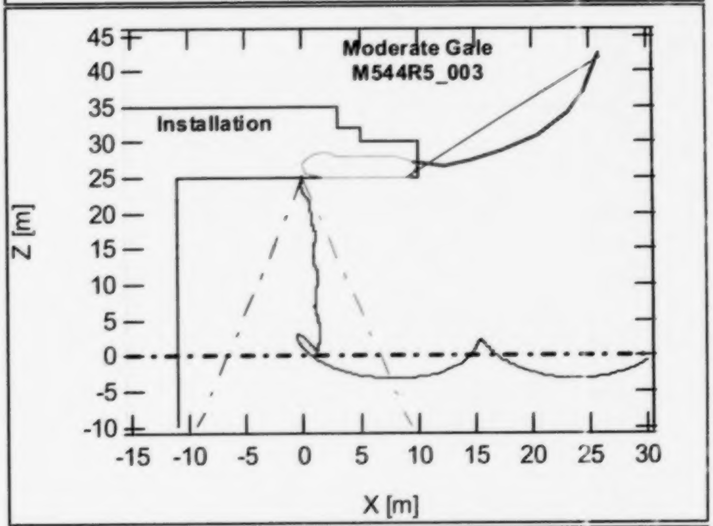
X [m]


Moderate Gale
M544R5_003
Installation
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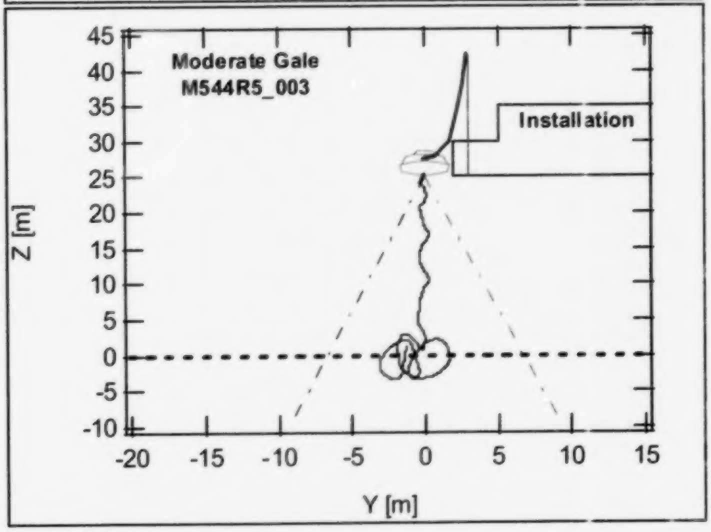
X [m]


Moderate Gale
M544R5_003
Installation
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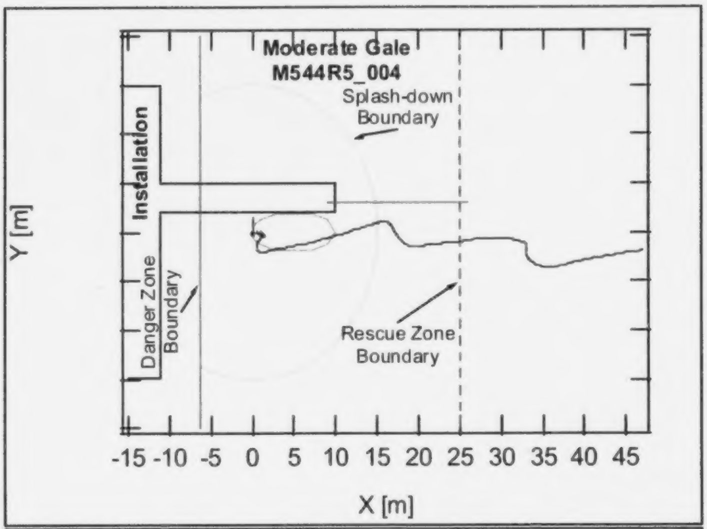
Y [m]


Moderate Gale
M544R5_004
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
X [m]
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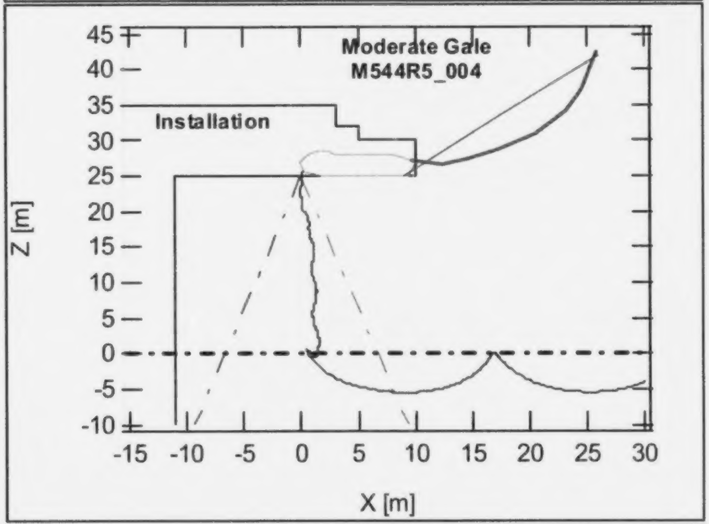
Moderate Gale
M544R5_004
Installation
Z [m]
X [m]
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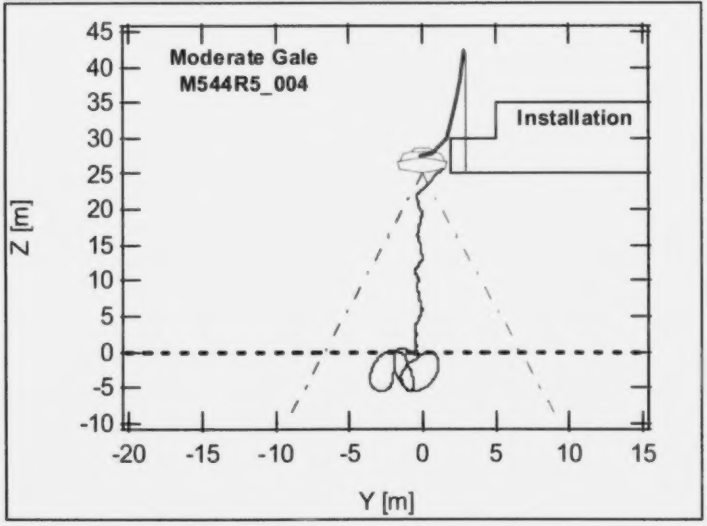
-15 -10 -5 0 5 10 15 20 25 30


Moderate Gale
M544R5_004
Installation
Z [m]
Y [m]
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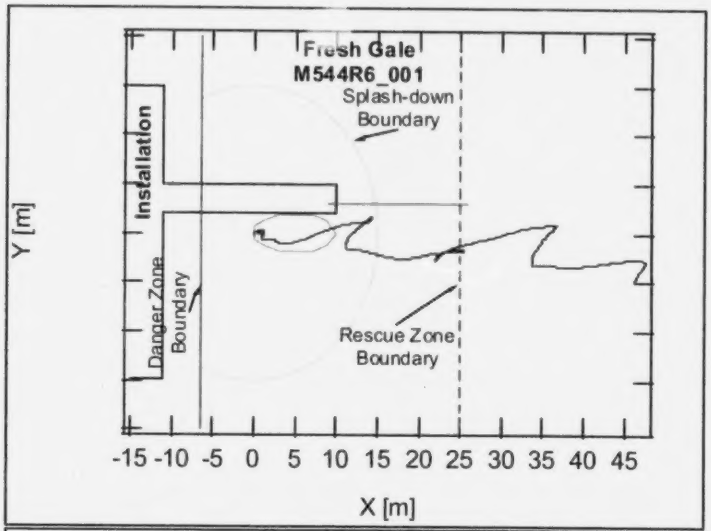
-20 -15 -10 -5 0 5 10 15



Fresh Gale
M544R6_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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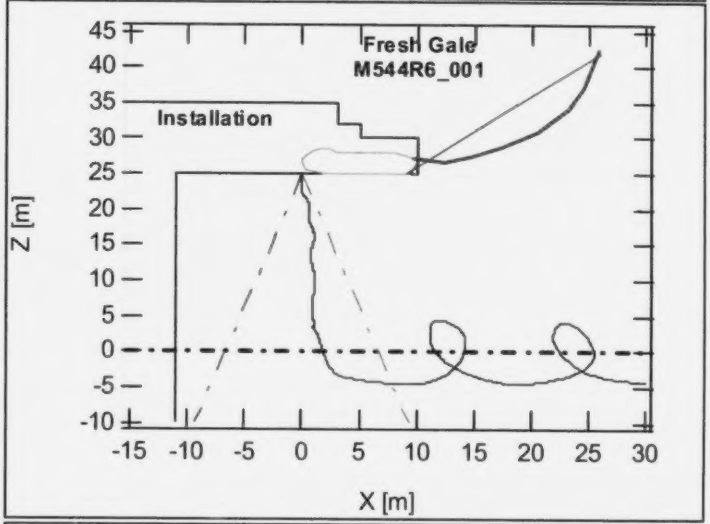
X [m]



Fresh Gale
M544R6_001
Installation
Z [m]
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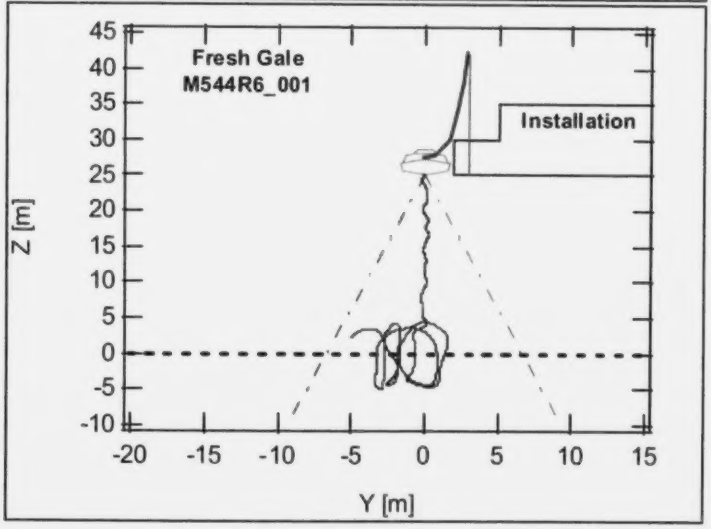
X [m]



Fresh Gale
M544R6_001
Installation
Z [m]
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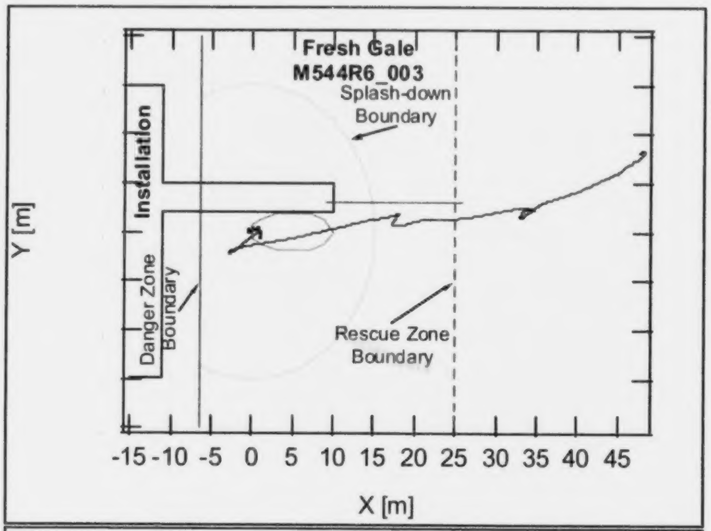
Y [m]


Fresh Gale
M544R6_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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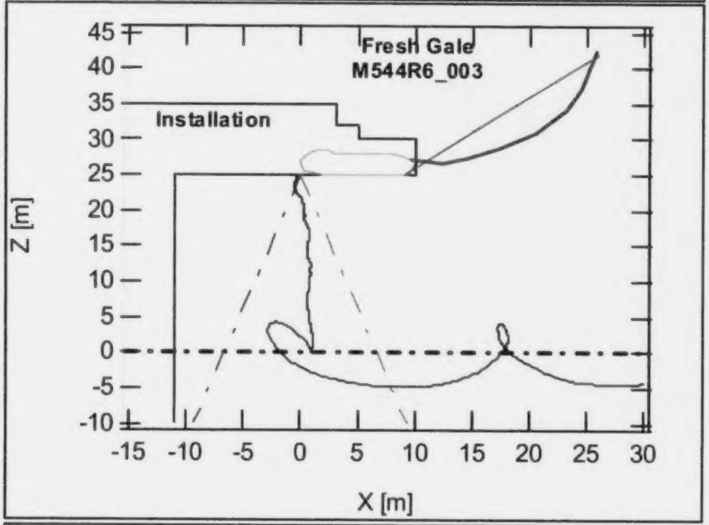
X [m]


Fresh Gale
M544R6_003
Installation
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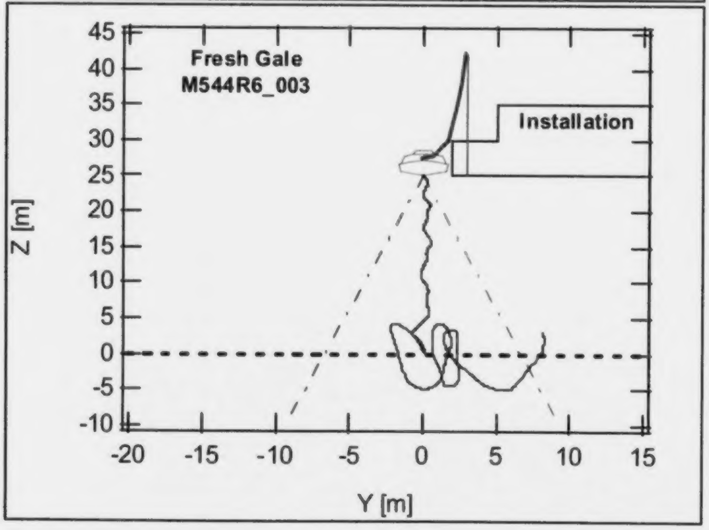
X [m]


Fresh Gale
M544R6_003
Installation
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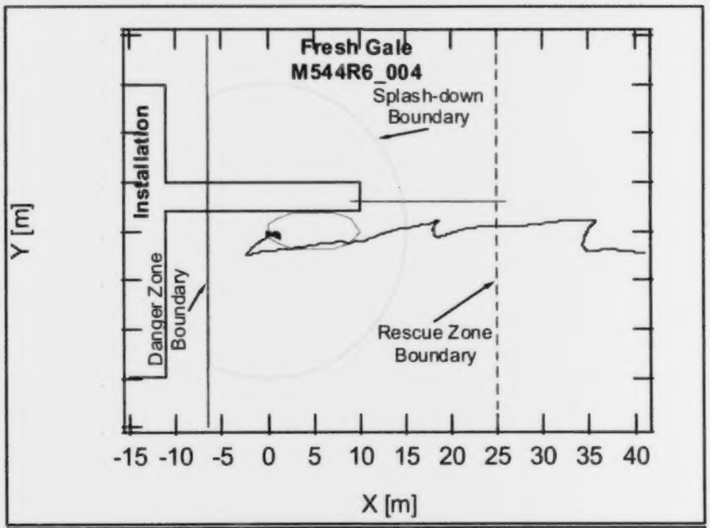
-20 -15 -10 -5 0 5 10 15
Y [m]


Fresh Gale
M544R6_004
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
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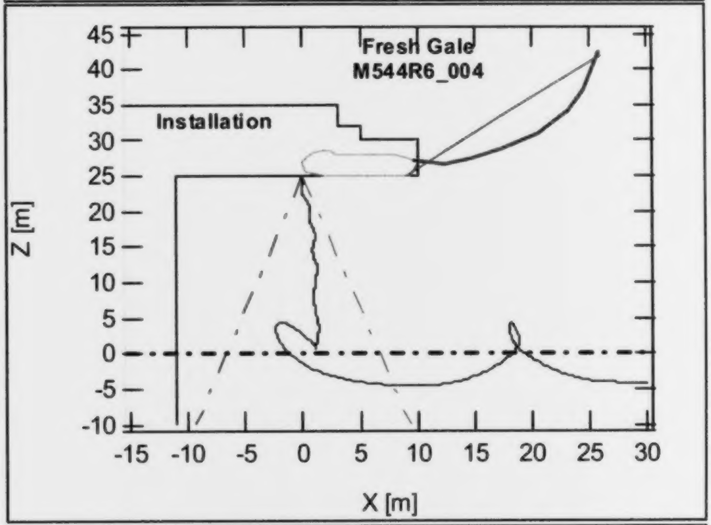
X [m]


Fresh Gale
M544R6_004
Installation
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Z [m]
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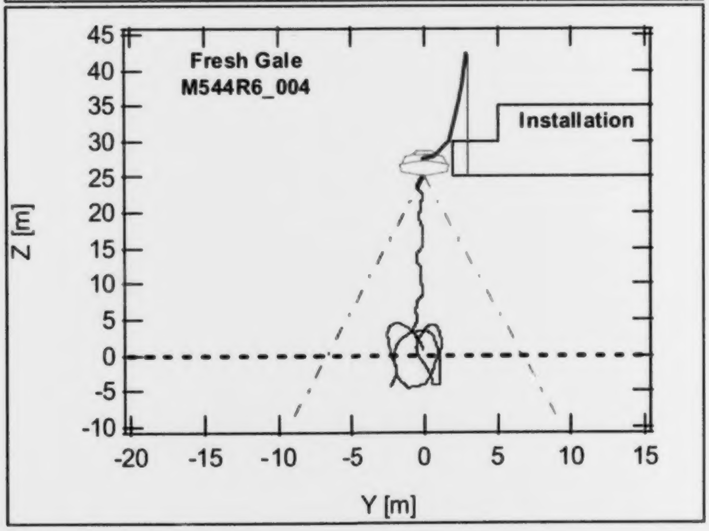
X [m]


Fresh Gale
M544R6_004
Installation
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Z [m]
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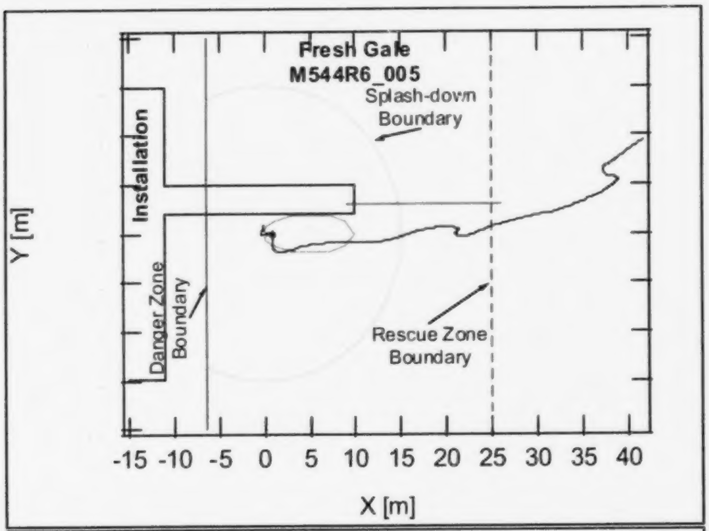
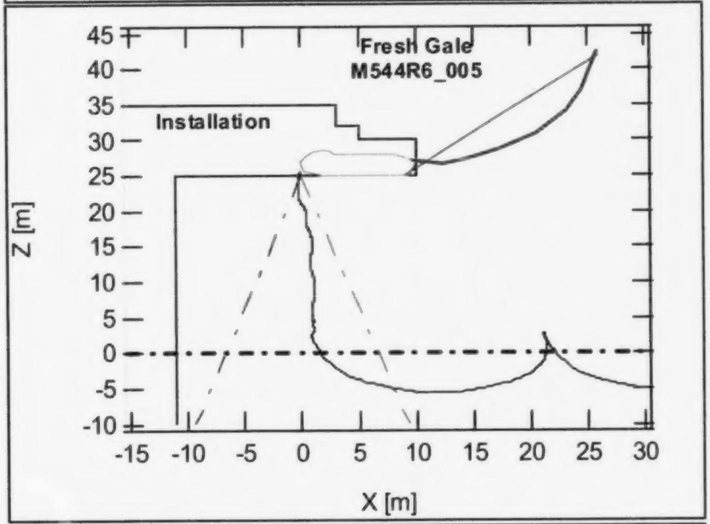
Y [m]


Fresh Gale
M544R6_005
Splash-down
Boundary
Installation
Y [m]
Danger Zone
Boundary
Rescue Zone
Boundary
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Fresh Gale
M544R6_005
Installation
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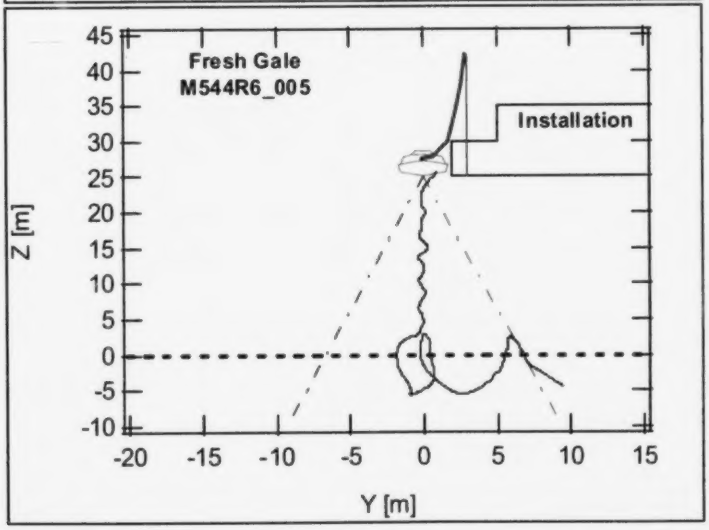
Z [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Fresh Gale
M544R6_005
Installation
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-10
Z [m]
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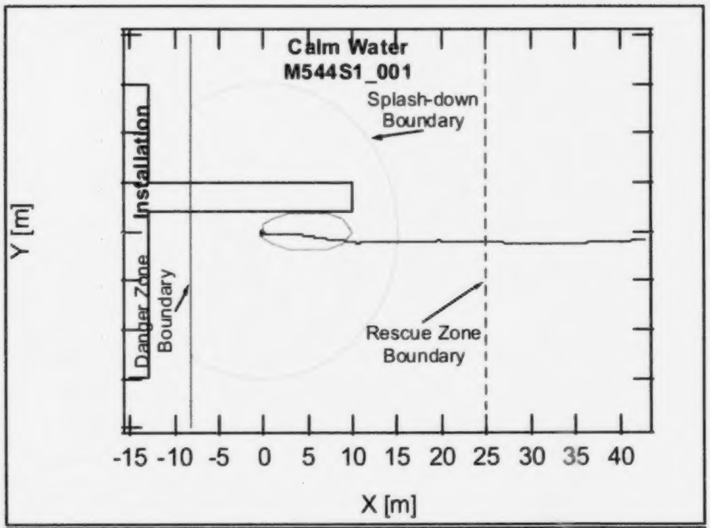
Y [m]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Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
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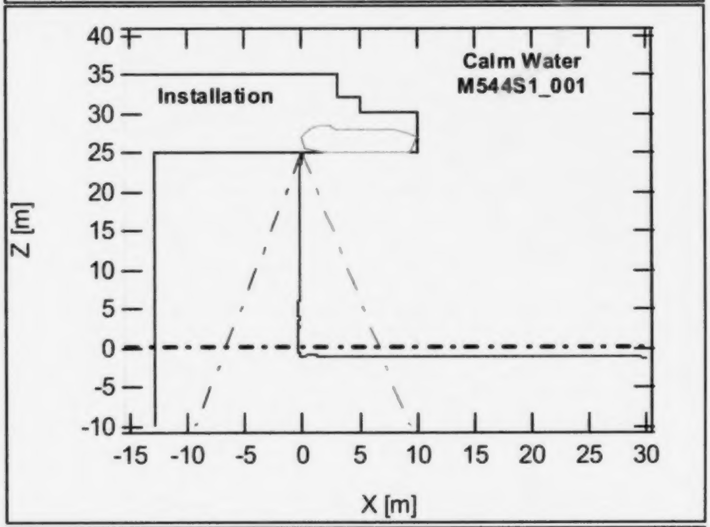
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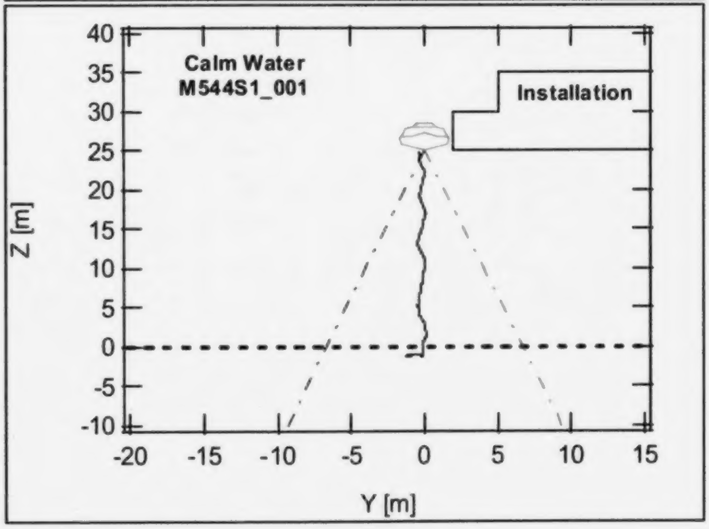
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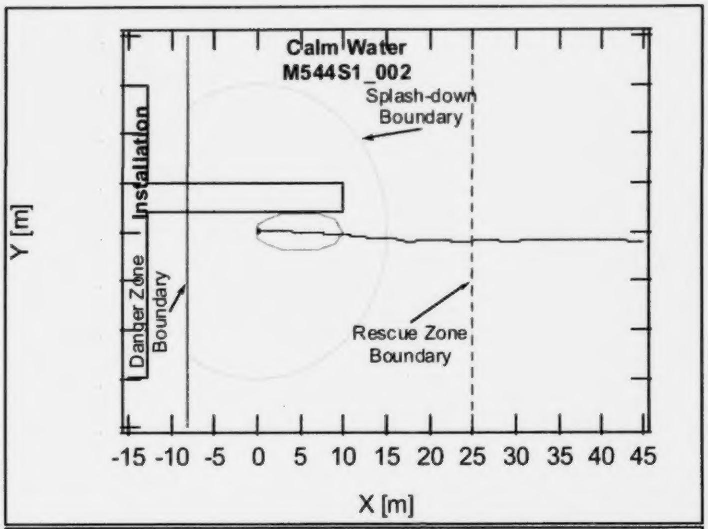
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Installation
Danger Zone Boundary
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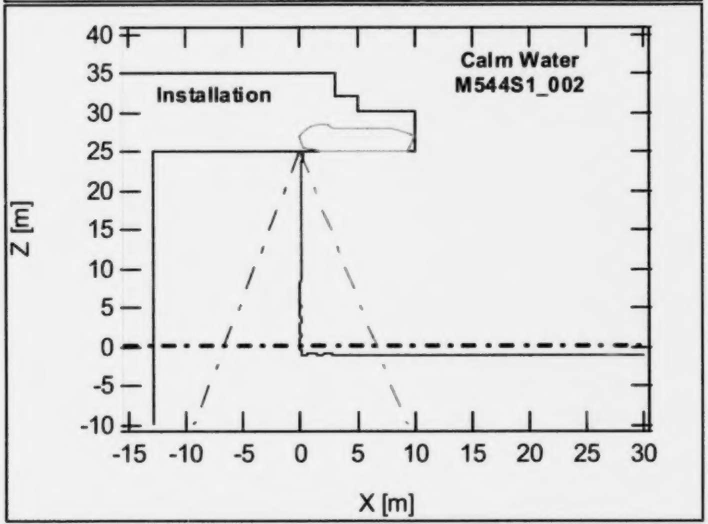
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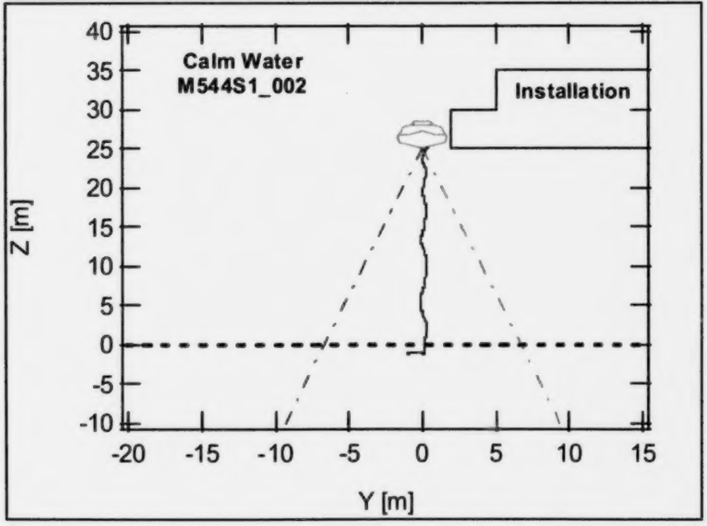
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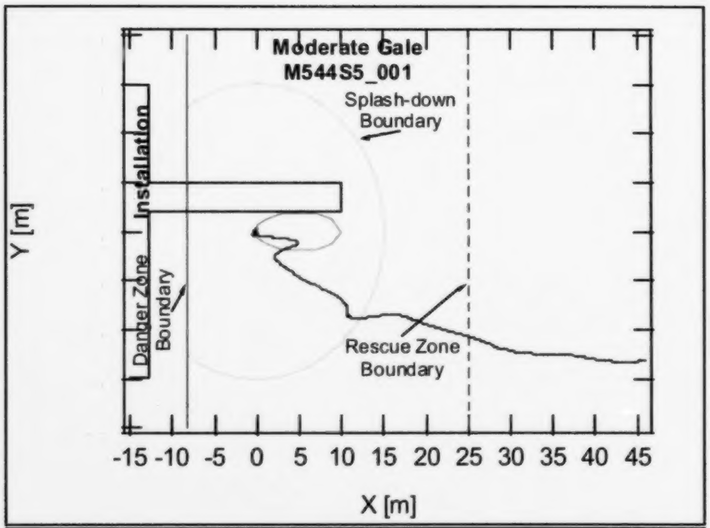
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Boundary
Installation
Danger Zone
Boundary
Rescue Zone
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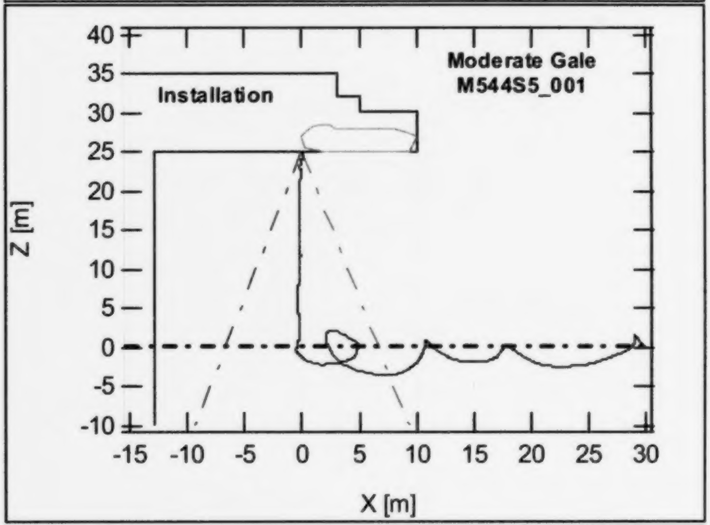
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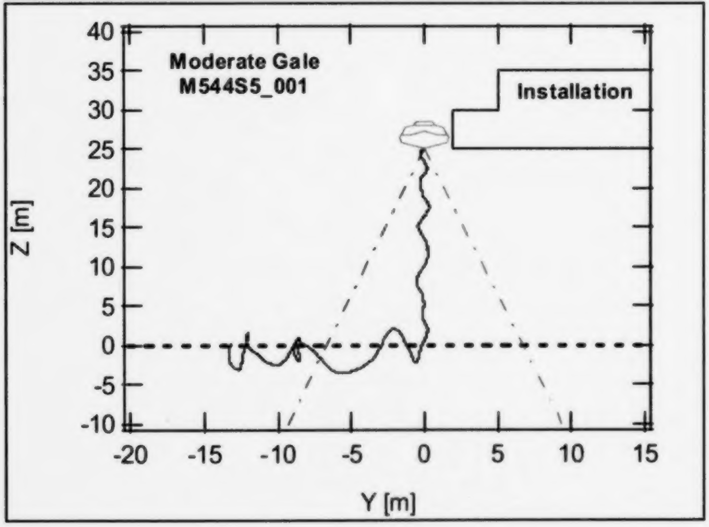
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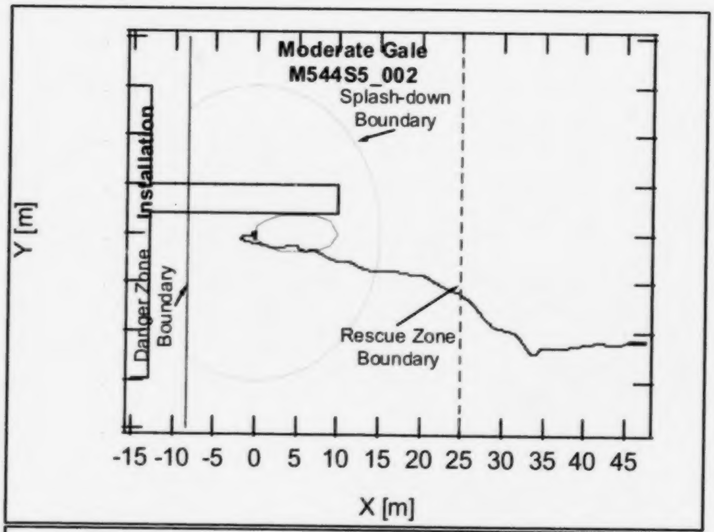
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Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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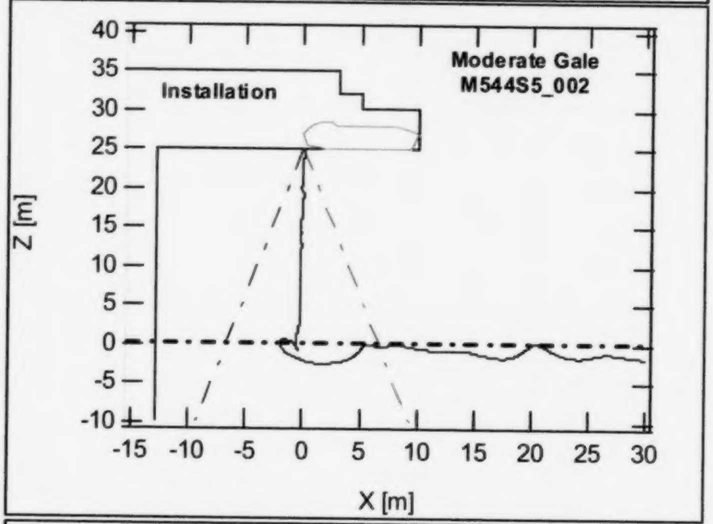
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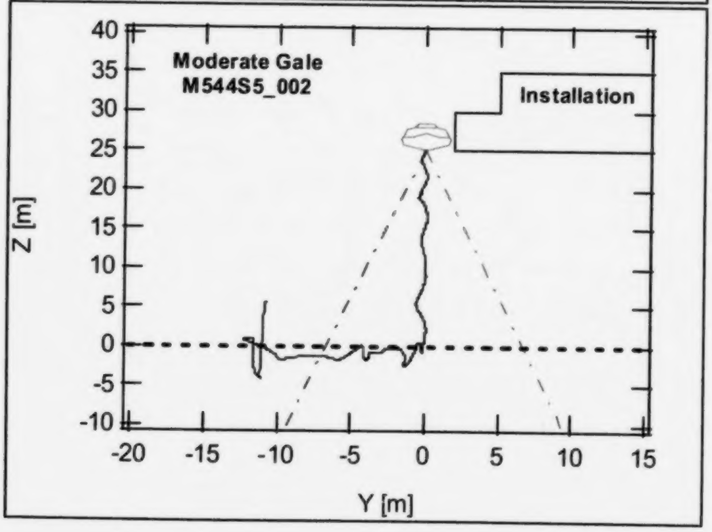
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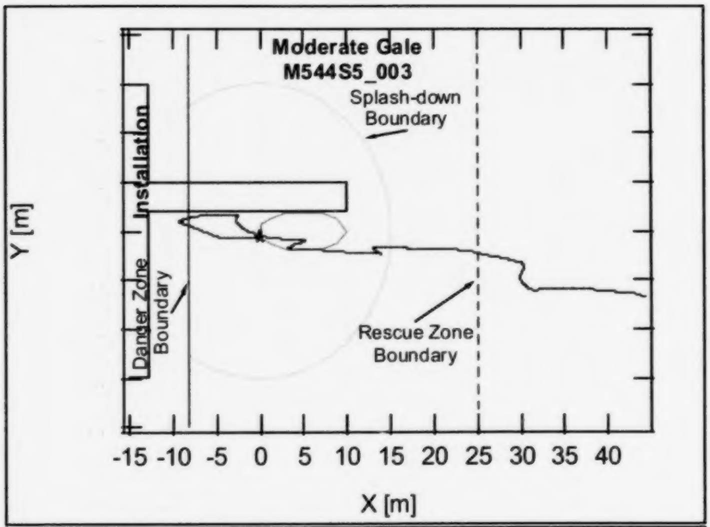
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Danger Zone
Boundary
Rescue Zone
Boundary
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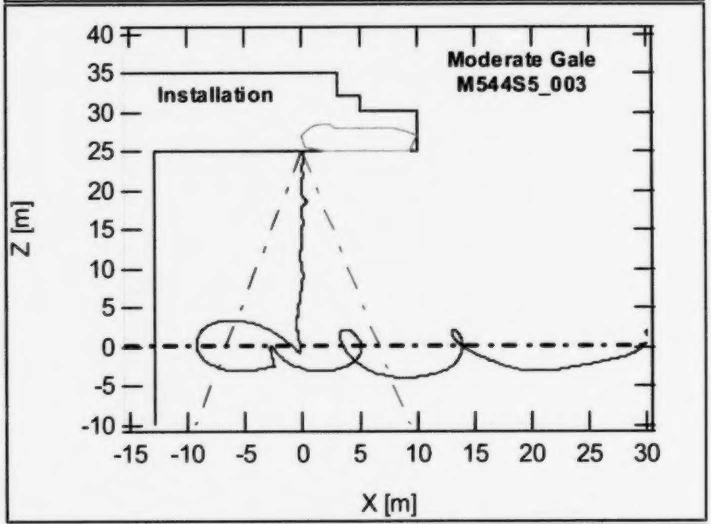
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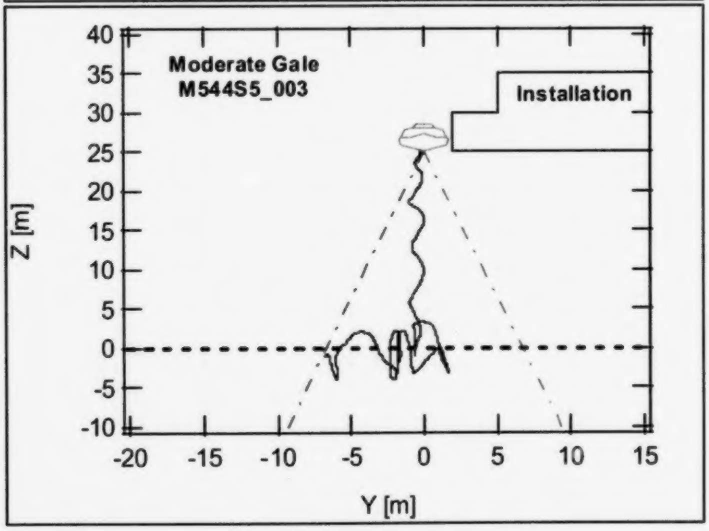
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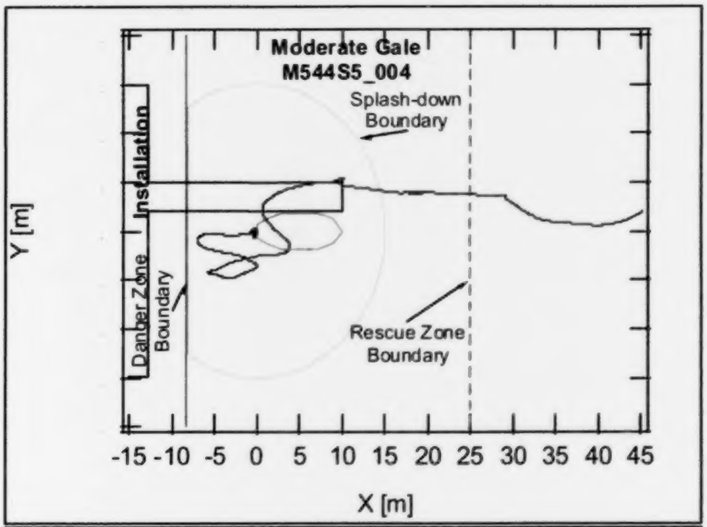
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Installation
Danger Zone Boundary
Rescue Zone Boundary
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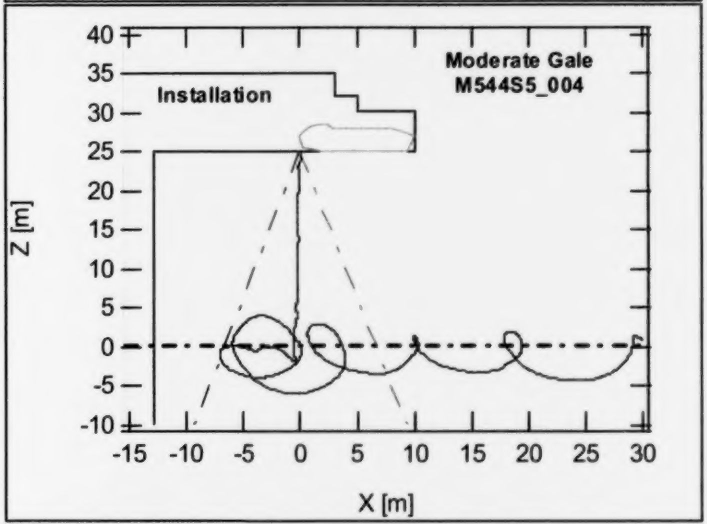
X [m]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Moderate Gale
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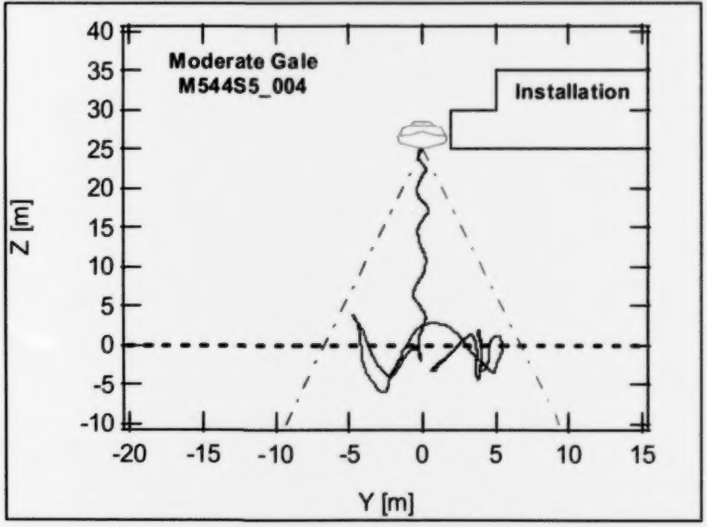
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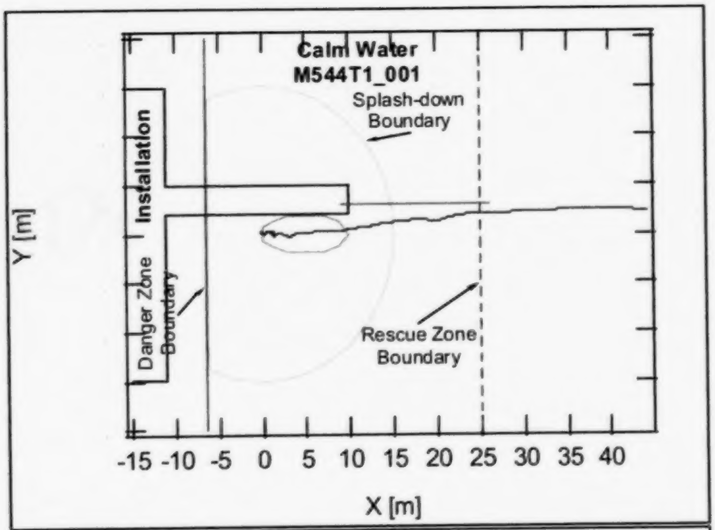
Calm Water
M544T1_001
Splash-down
Boundary
Installation
Y [m]
Danger Zone
Boundary
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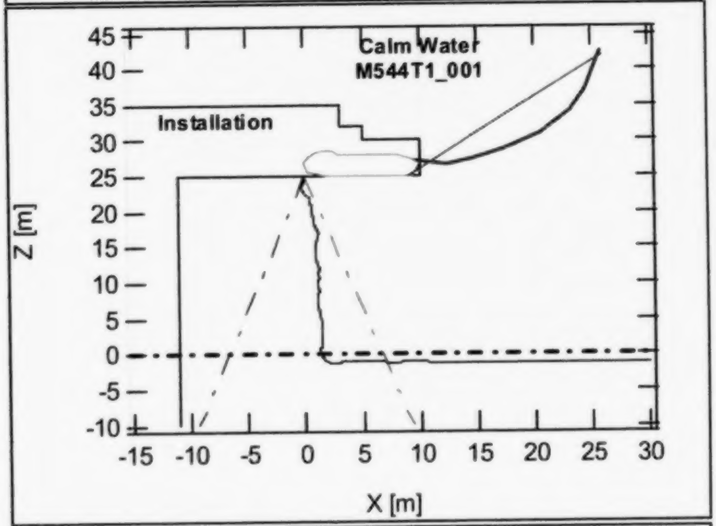
Calm Water
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Installation
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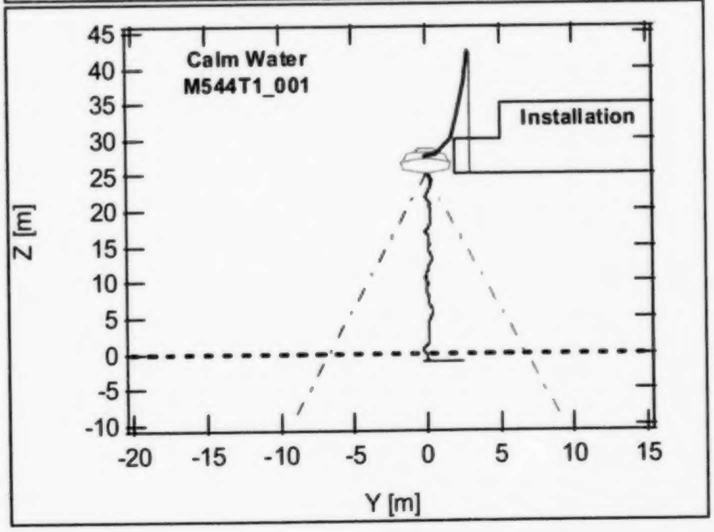
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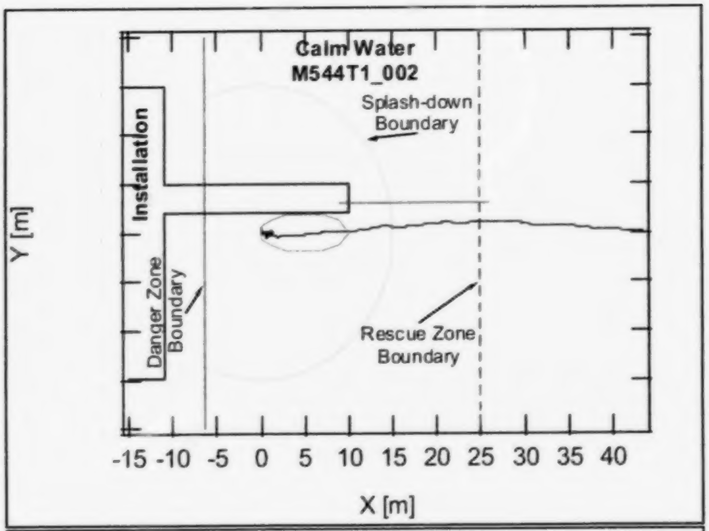
Calm Water
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Splash-down Boundary
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Danger Zone Boundary
Rescue Zone Boundary
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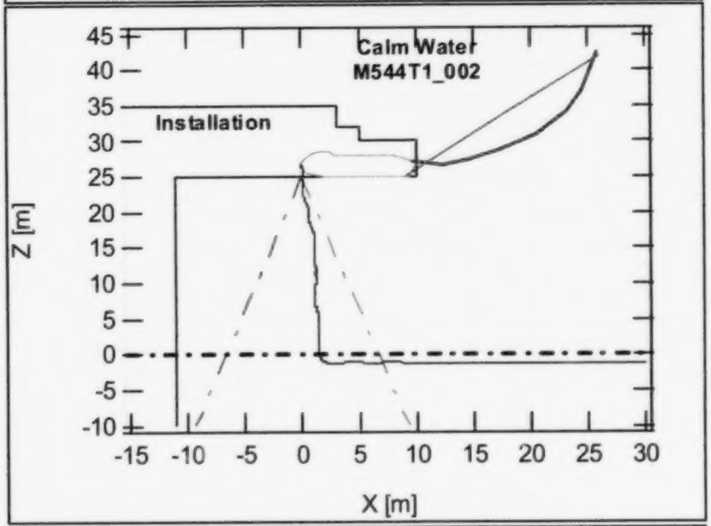
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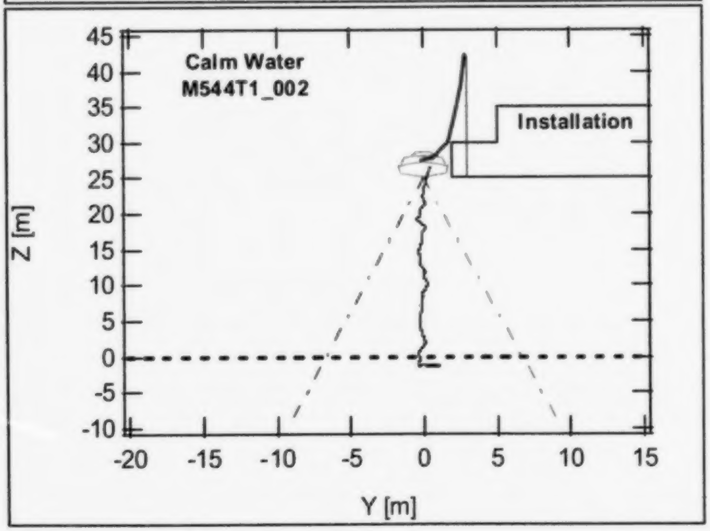
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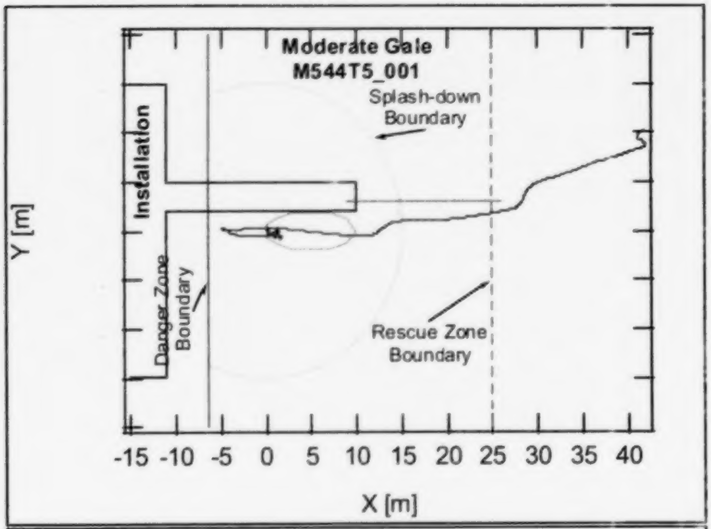
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Danger Zone
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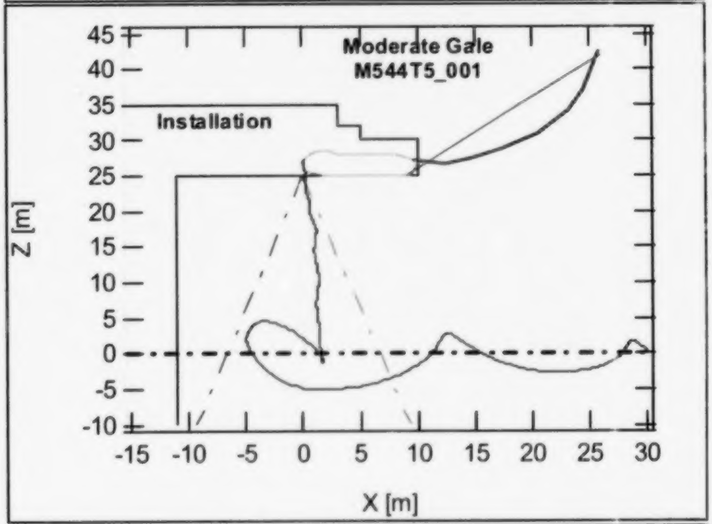
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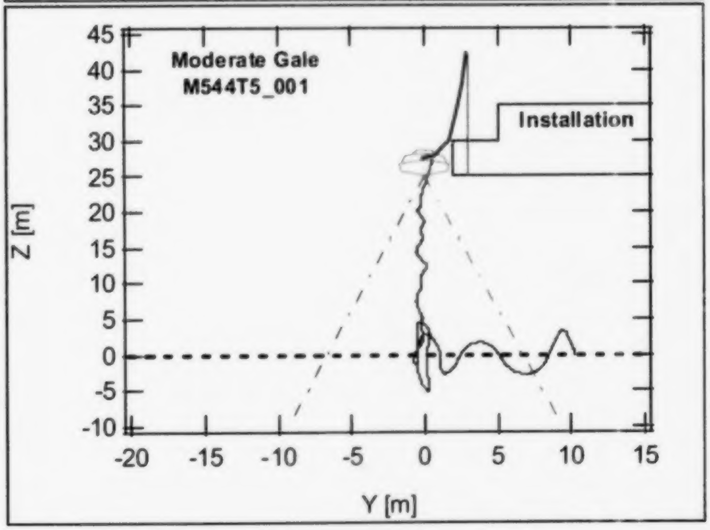
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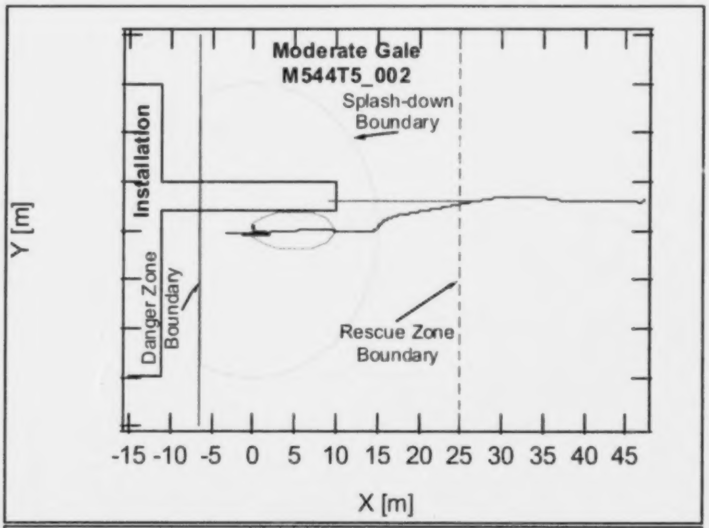
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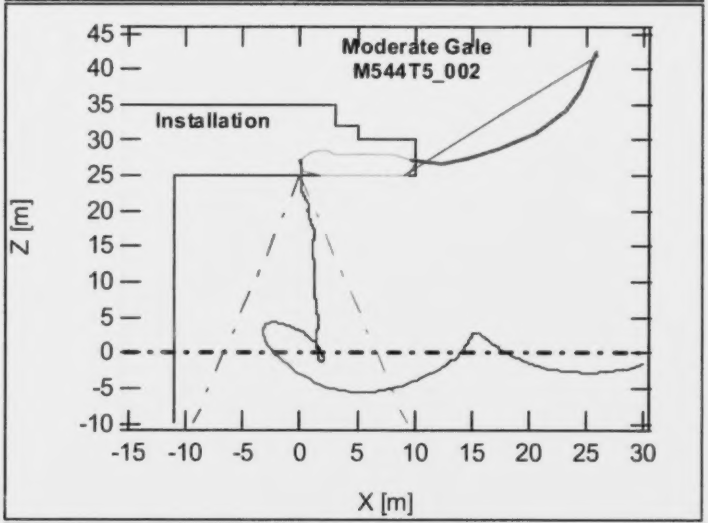
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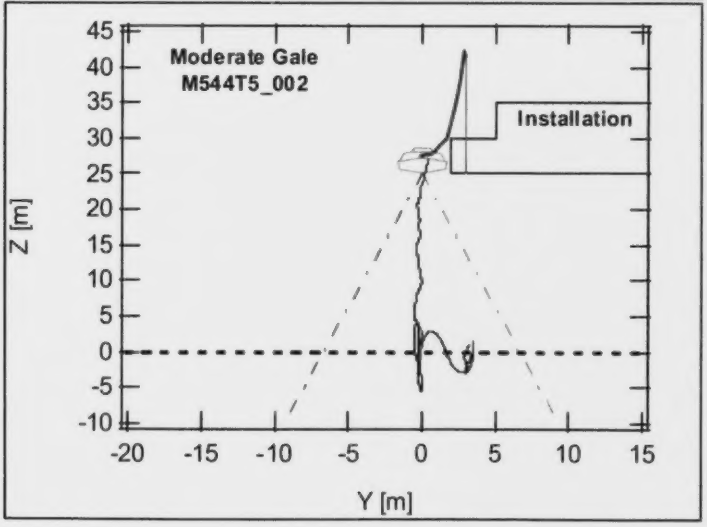
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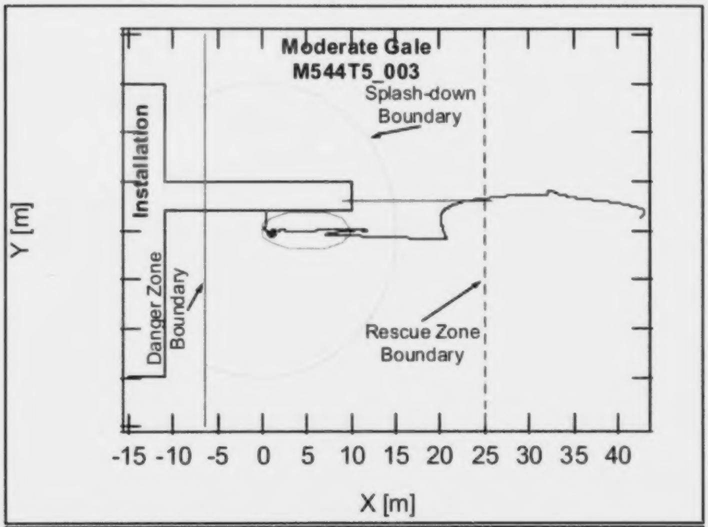
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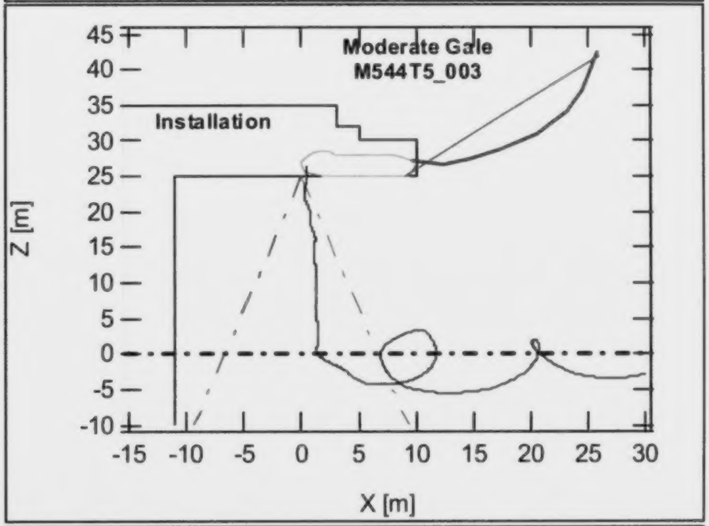
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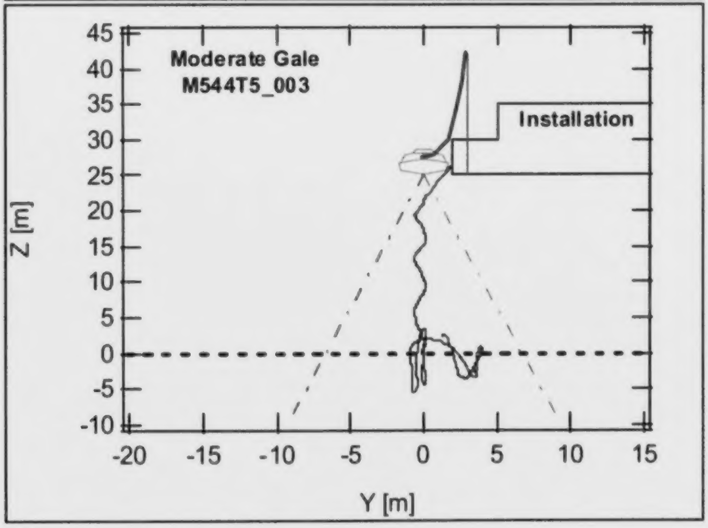
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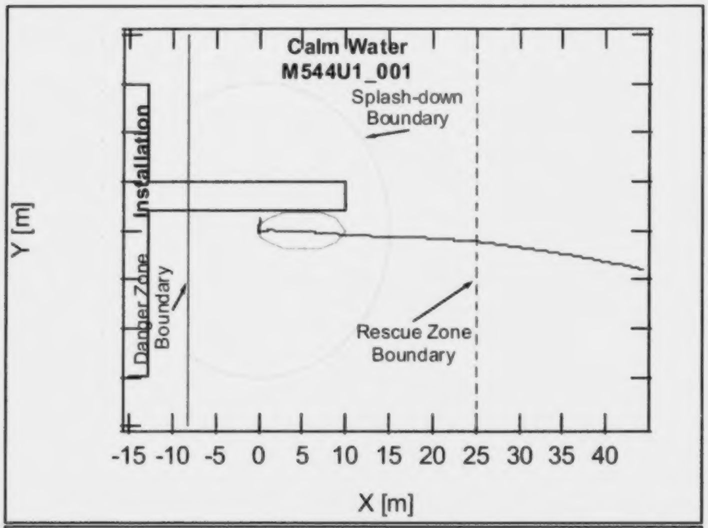
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Installation
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Boundary
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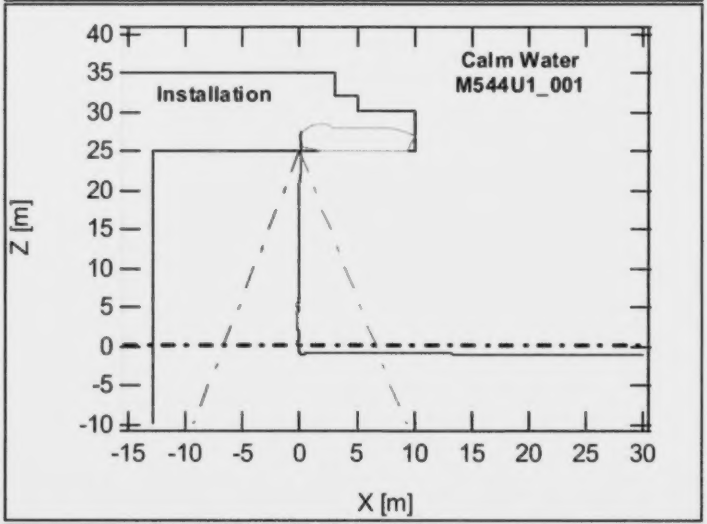
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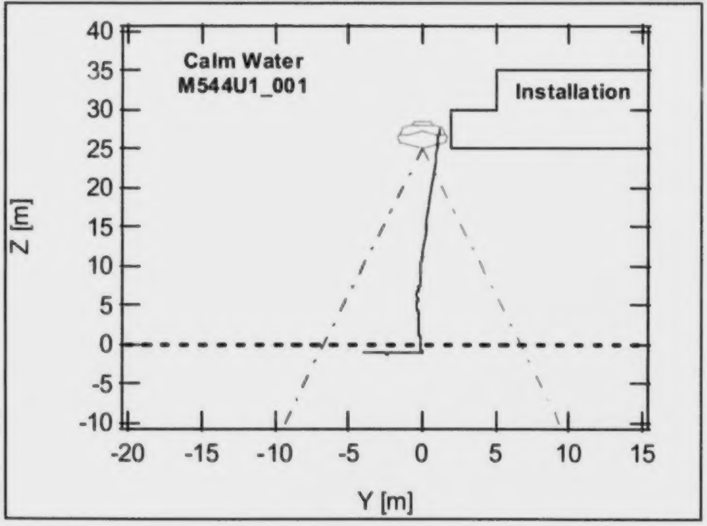
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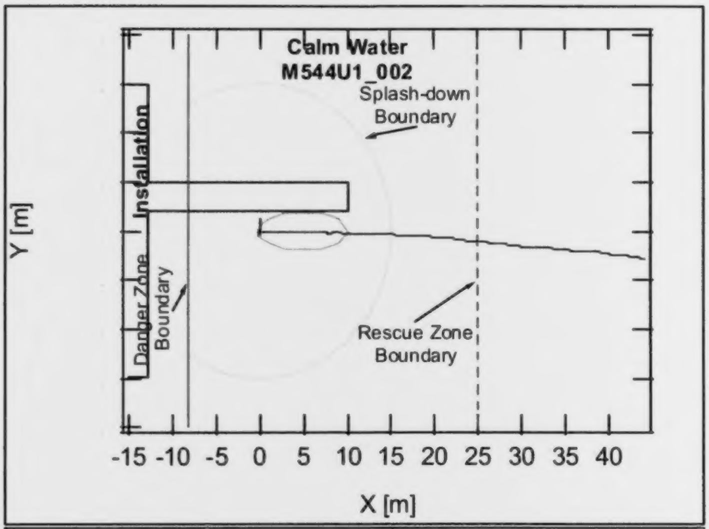
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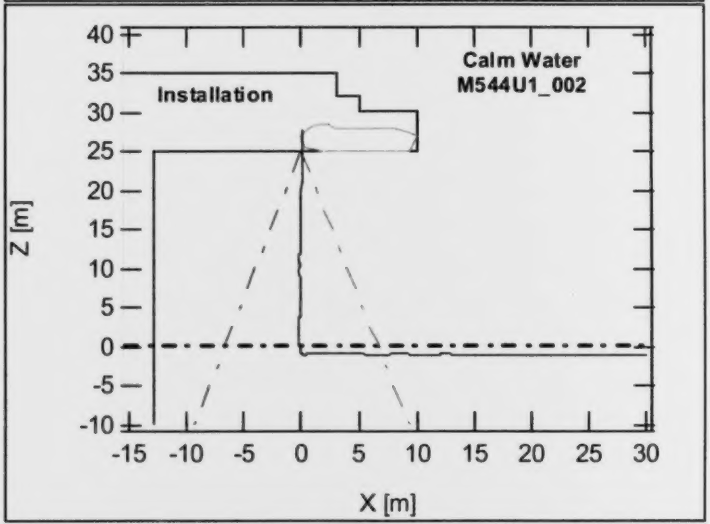
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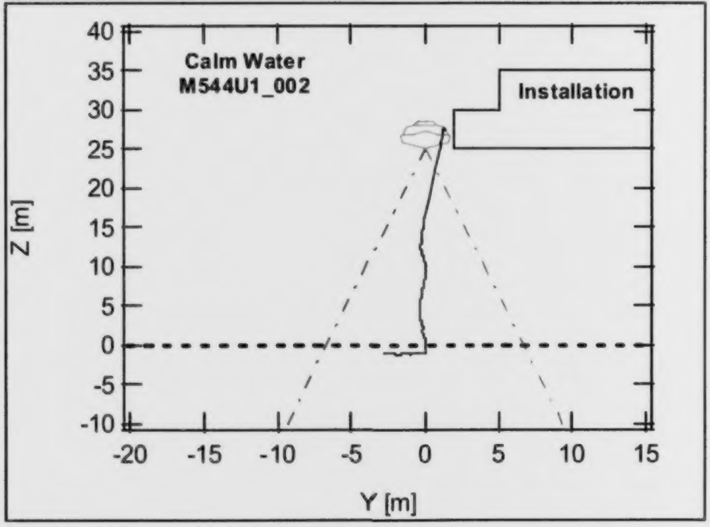
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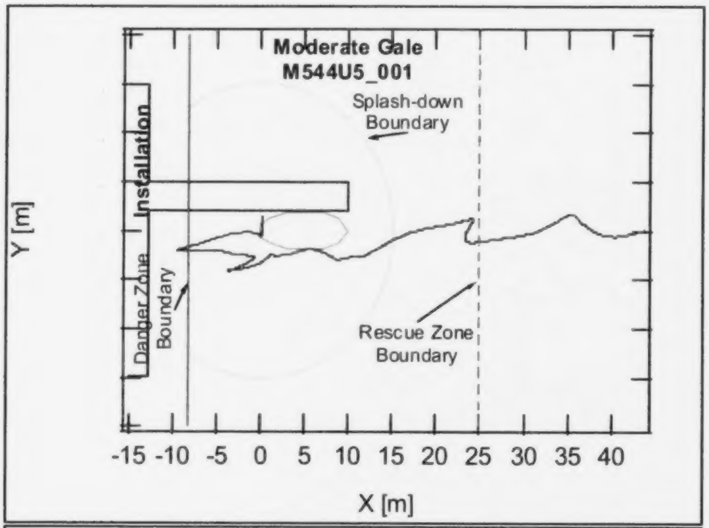
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Danger Zone
Boundary
Rescue Zone
Boundary
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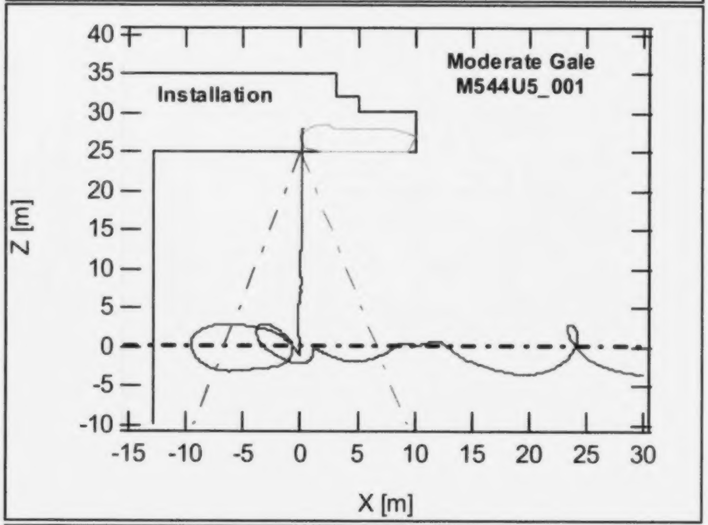
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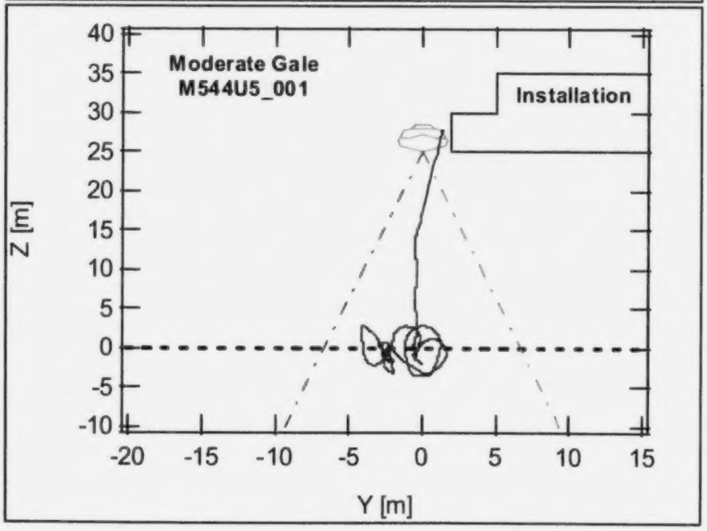
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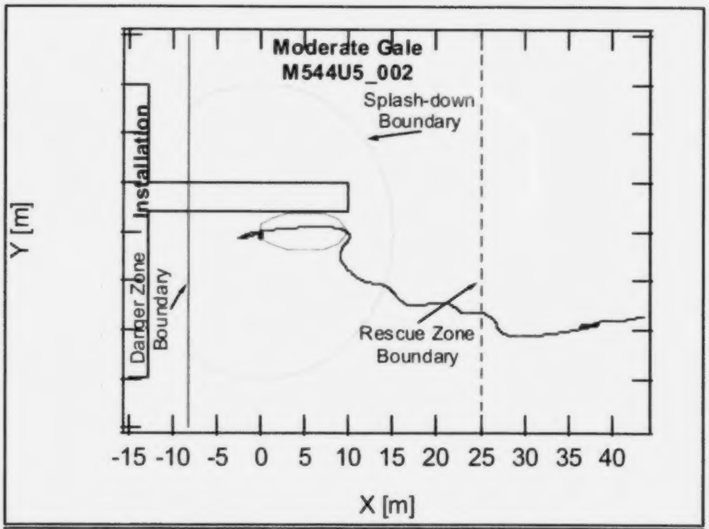
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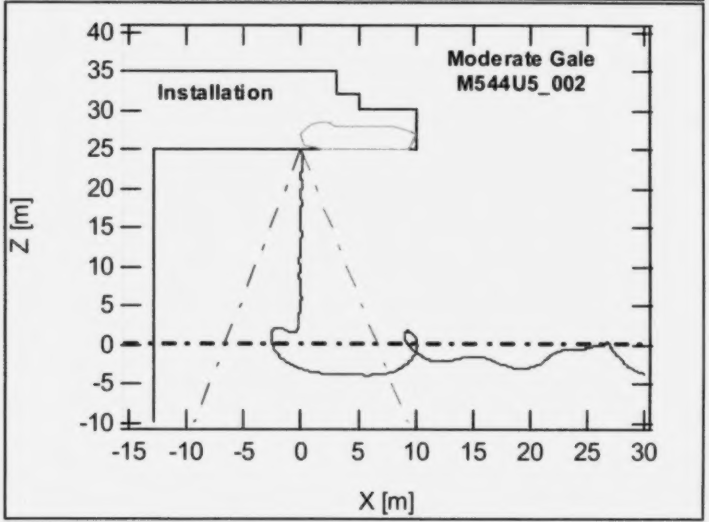
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Installation
Moderate Gale
M544U5_002
Z [m]
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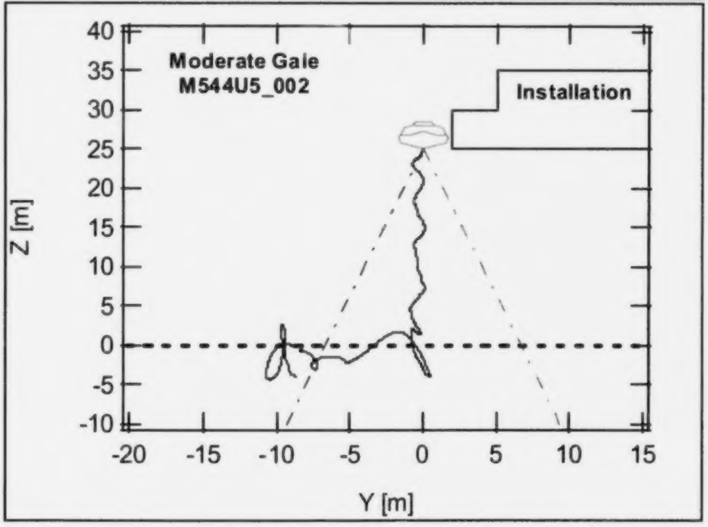
X [m]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Moderate Gale
M544U5_002
Installation
Z [m]
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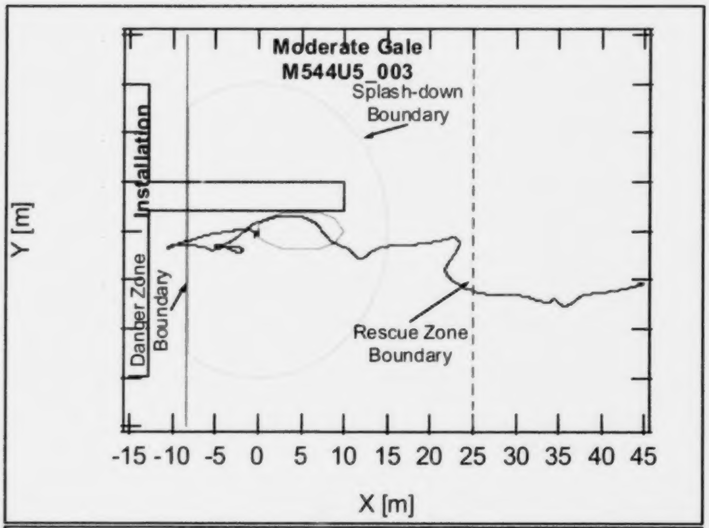
Y [m]


Moderate Gale
M544U5_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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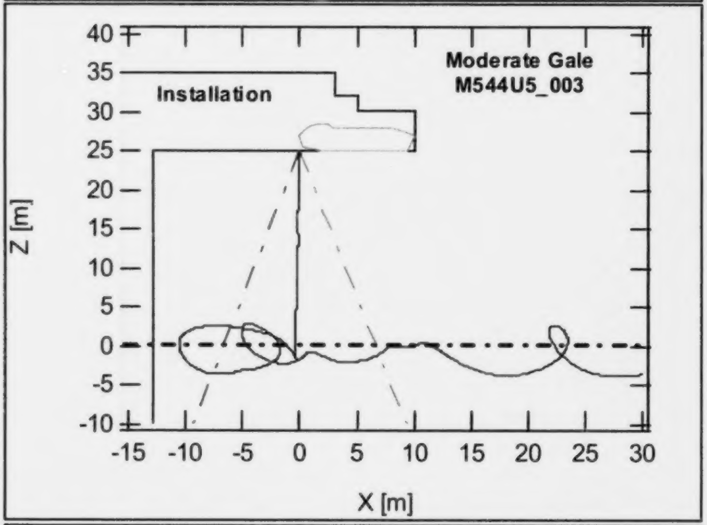
X [m]


Moderate Gale
M544U5_003
Installation
Z [m]
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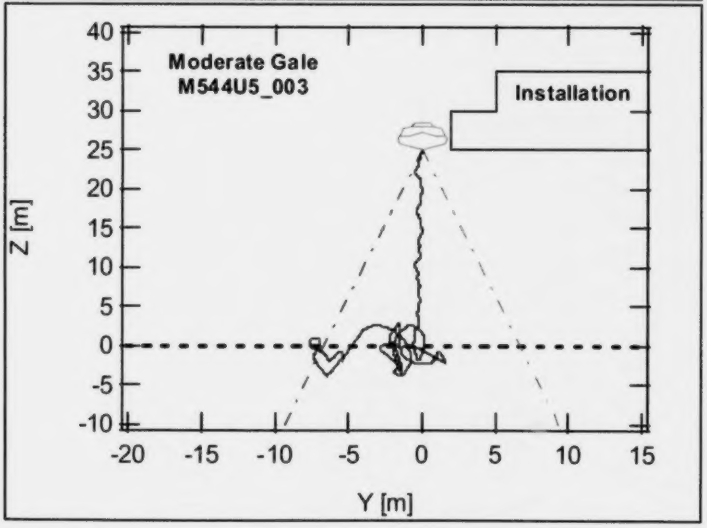
X [m]


Moderate Gale
M544U5_003
Installation
Z [m]
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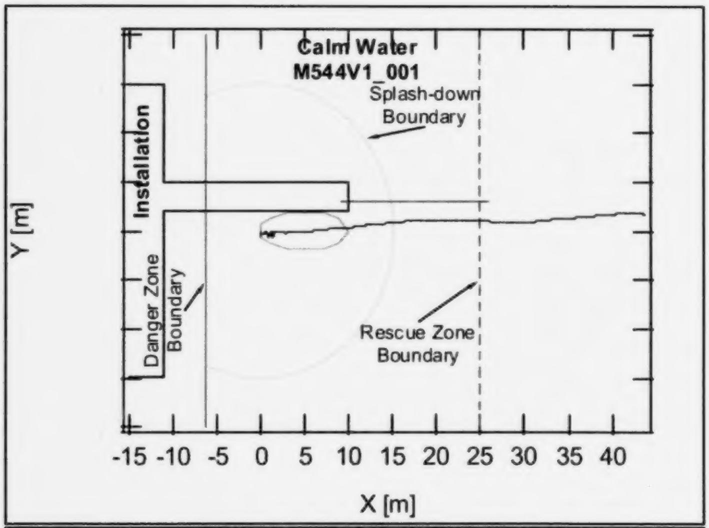
Y [m]


Calm Water
M544V1_001
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15
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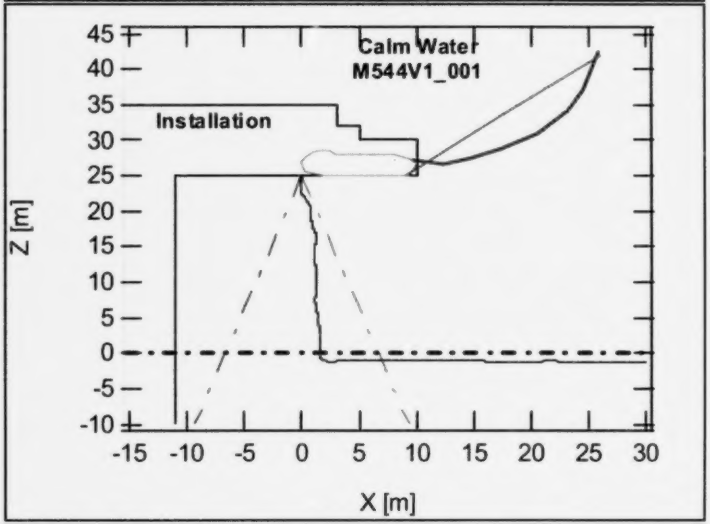
X [m]


Calm Water
M544V1_001
Installation
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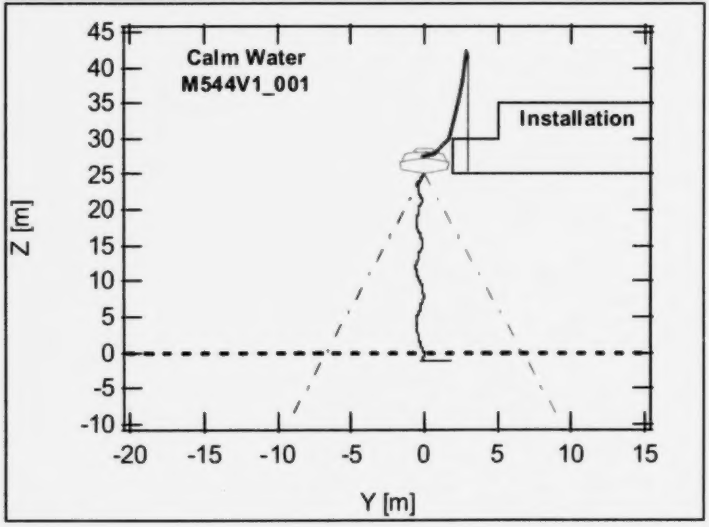
X [m]


Calm Water
M544V1_001
Installation
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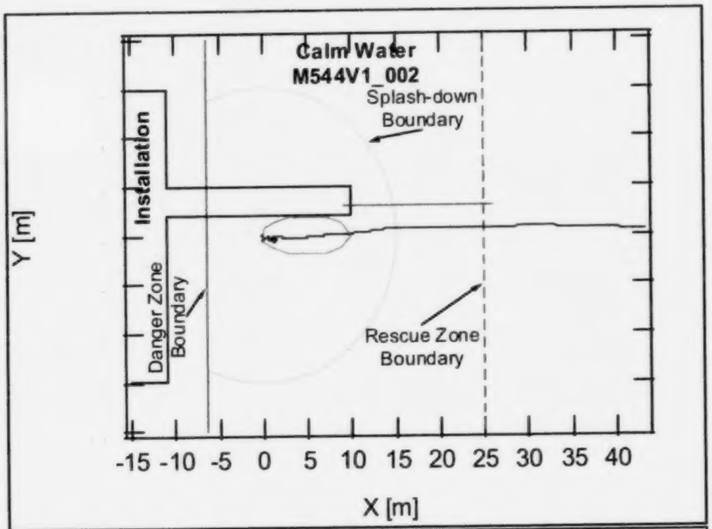
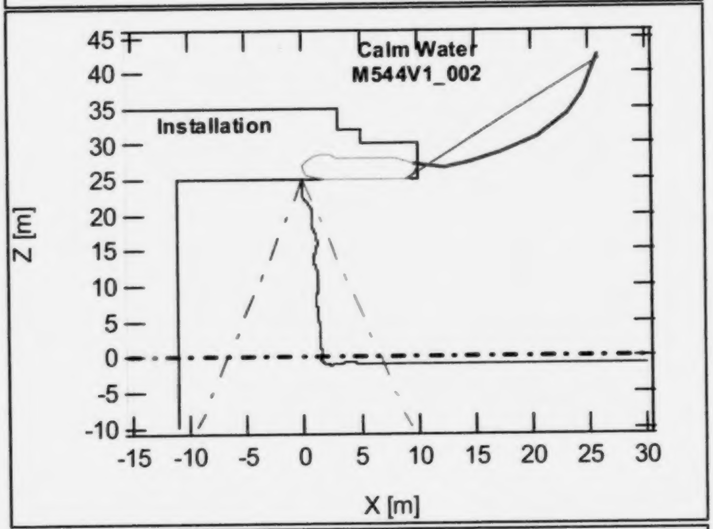
Y [m]


Calm Water
M544V1_002
Splash-down
Boundary
Installation
Danger Zone
Boundary
Rescue Zone
Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Calm Water
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Installation
Z [m]
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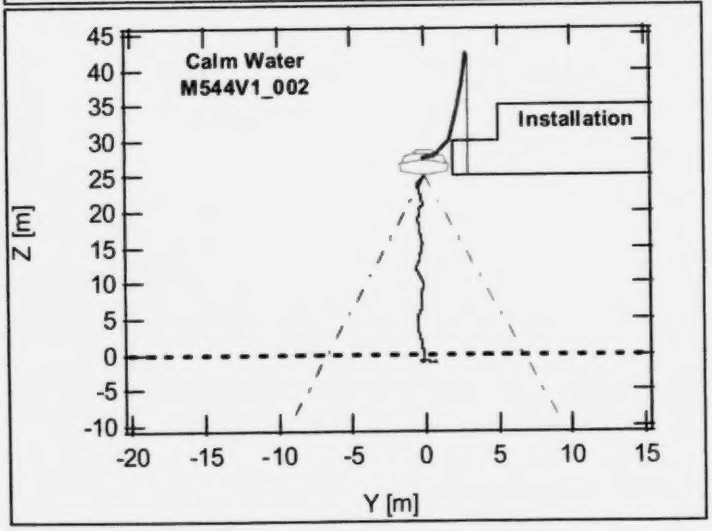
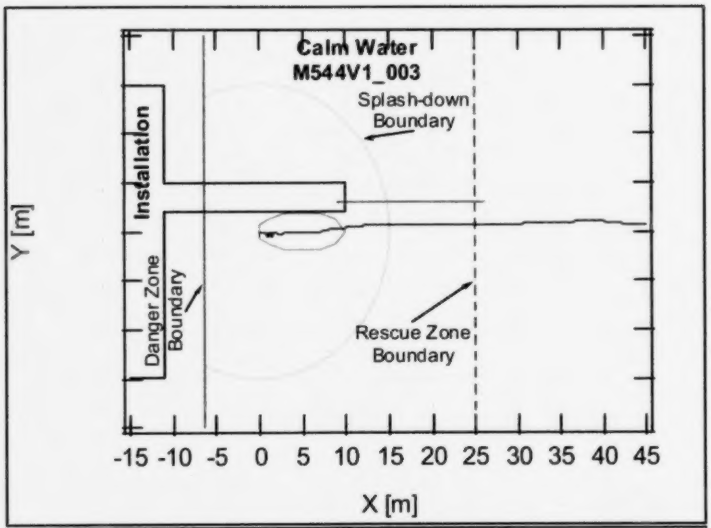
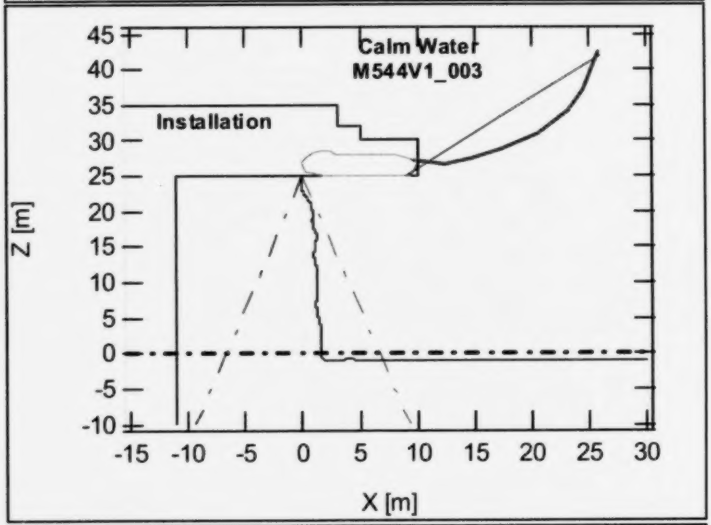
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Calm Water
M544V1_002
Installation
Z [m]
45 40 35 30 25 20 15 10 5 0 -5 -10
-20 -15 -10 -5 0 5 10 15
Y [m]


Calm Water
M544V1_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40 45
X [m]


Calm Water
M544V1_003
Installation
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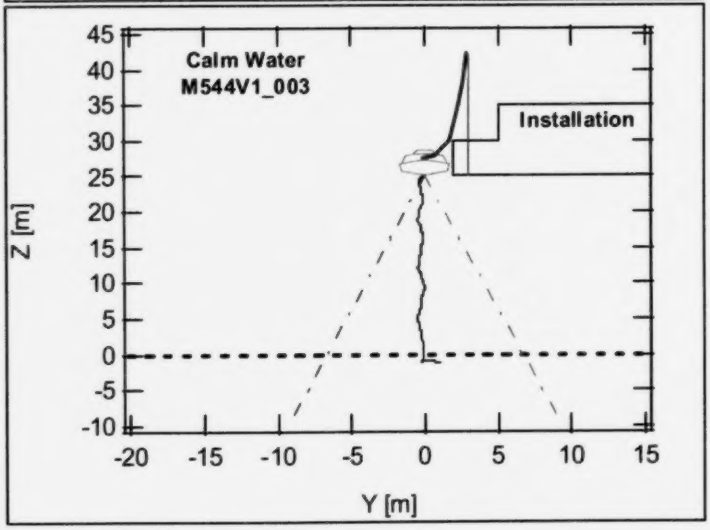
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Calm Water
M544V1_003
Installation
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Z [m]
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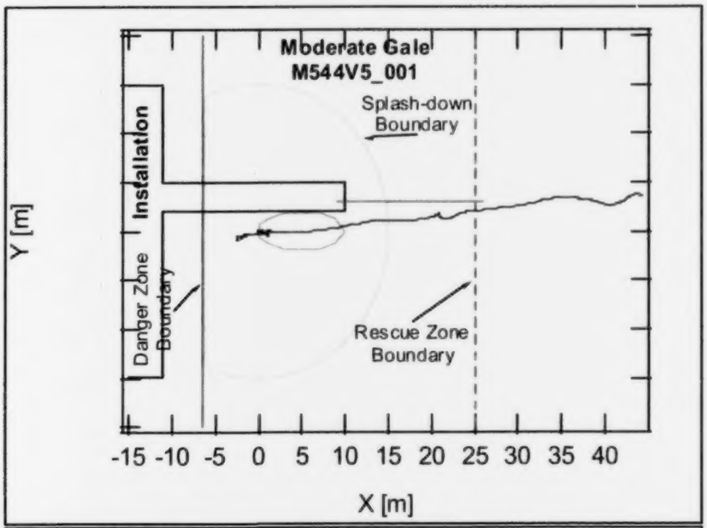
Moderate Gale
M544V5_001
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
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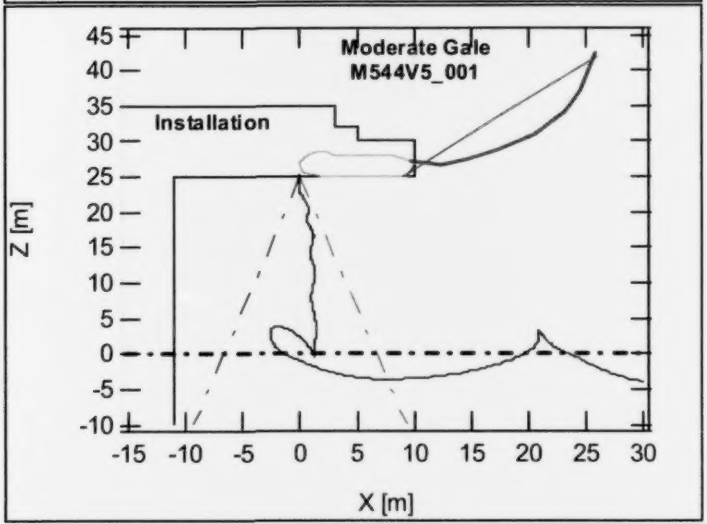
X [m]


Moderate Gale
M544V5_001
Installation
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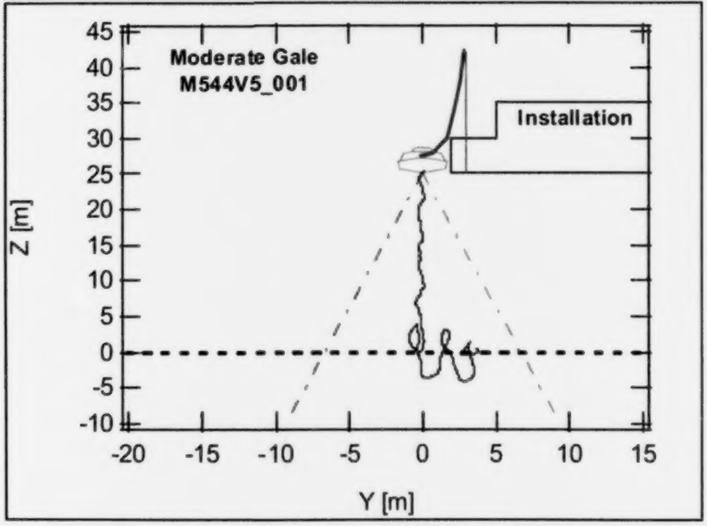
Moderate Gale
M544V5_001
Installation
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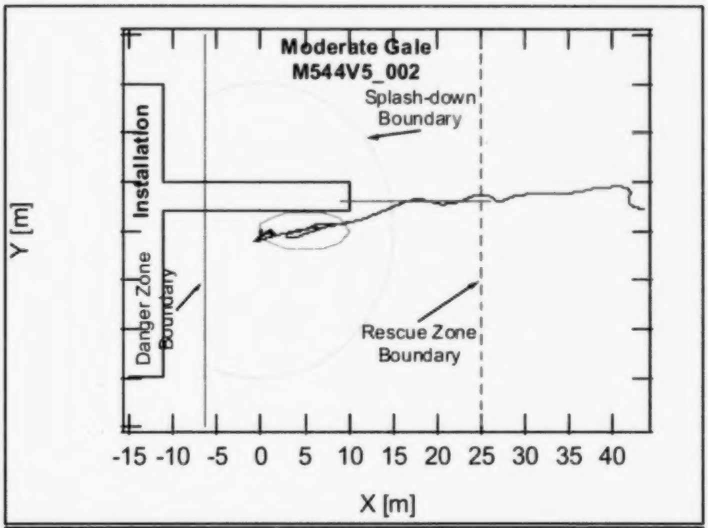
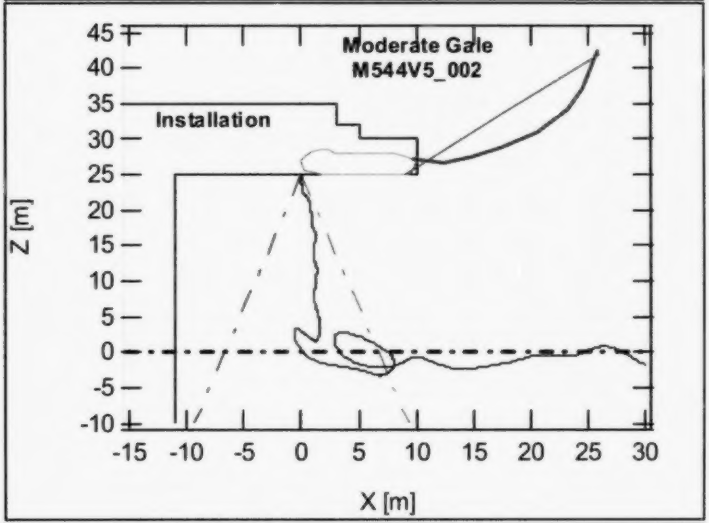
Y [m]


Moderate Gale
M544V5_002
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40
X [m]


Moderate Gale
M544V5_002
Installation
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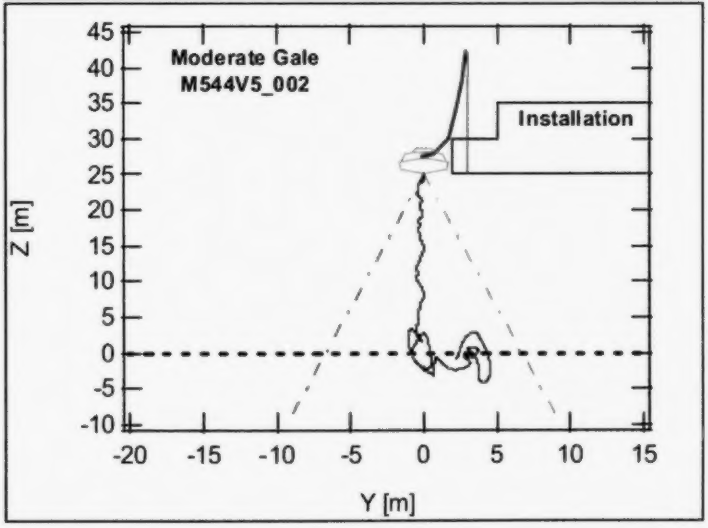
Z [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Moderate Gale
M544V5_002
Installation
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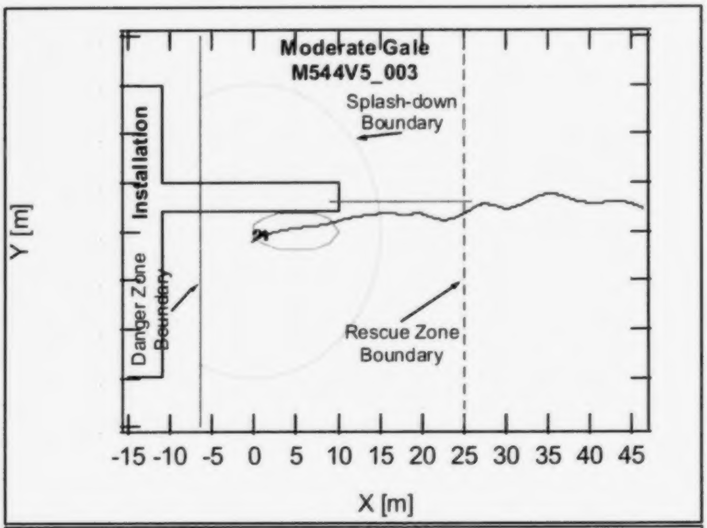
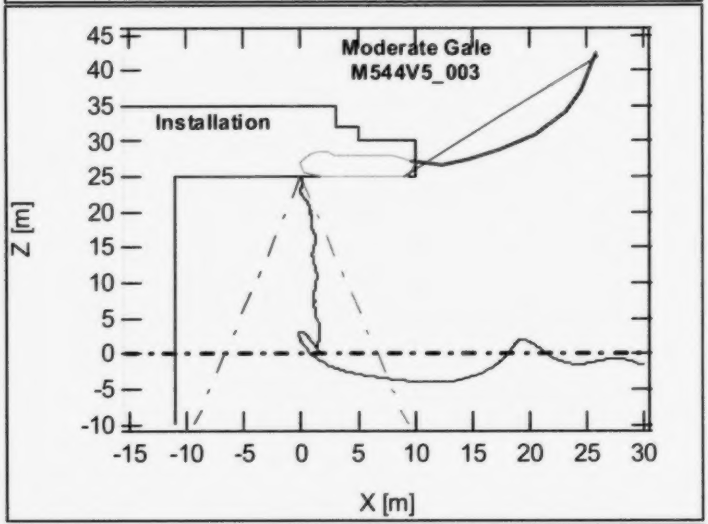
Z [m]
-20 -15 -10 -5 0 5 10 15
Y [m]


Moderate Gale
M544V5_003
Splash-down Boundary
Installation
Danger Zone Boundary
Rescue Zone Boundary
Y [m]
-15 -10 -5 0 5 10 15 20 25 30 35 40 45
X [m]


Moderate Gale
M544V5_003
Installation
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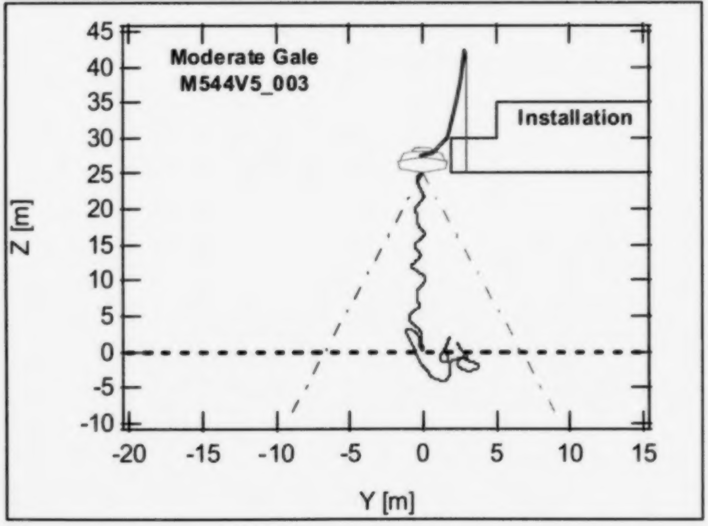
Z [m]
-15 -10 -5 0 5 10 15 20 25 30
X [m]


Moderate Gale
M544V5_003
Installation
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Z [m]
-20 -15 -10 -5 0 5 10 15
Y [m]

Appendix 9

Video Log

A Series

M544A1_001
TAPE: 4
TIME ON TAPE: 0:21:05
COMMENTS: The boat makes straight headway

M544A1_001
TAPE: 4
TIME ON TAPE: 0:54:13
COMMENTS: The boat makes straight headway

M544A1_002
TAPE: 4
TIME ON TAPE: 0:21:46
COMMENTS: The boat makes straight headway

M544A1_003
TAPE: 4
TIME ON TAPE: 0:22:20
COMMENTS: The boat makes straight headway

M544A1_004
TAPE: 4
TIME ON TAPE: 0:39:43
COMMENTS: The boat makes straight headway

M544A1_005
TAPE: 4
TIME ON TAPE: 0:40:12
COMMENTS: The boat makes straight headway

M544A1_006
TAPE: 4
TIME ON TAPE: 0:40:57
COMMENTS: The boat makes straight headway

M544A1_007
TAPE: 4
TIME ON TAPE: 0:53:34
COMMENTS: The boat makes straight headway

M544A2_001
TAPE: 4
TIME ON TAPE: 0:23:14
COMMENTS: *The davit cables didn't release* and the boat has trouble clearing the platform

M544A2_002
TAPE: 4
TIME ON TAPE: 0:24:45
COMMENTS: There was no launch

M544A2_003
TAPE: 4
TIME ON TAPE: 0:26:52
COMMENTS: There was no launch

M544A2_004
TAPE: 4
TIME ON TAPE: 0:28:26
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544A2_005
TAPE: 4
TIME ON TAPE: 0:29:39
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544A2_006
TAPE: 4
TIME ON TAPE: 0:31:02
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544A2_007
TAPE: 4
TIME ON TAPE: 0:32:14
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544A2_008
TAPE: 4
TIME ON TAPE: 0:33:24
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544A2_009
TAPE: 4
TIME ON TAPE: 0:34:42
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544A3_001
TAPE: 4
TIME ON TAPE: 0:36:00
POSITION OF SPLASHDOWN: upslope
COMMENTS: The boat makes straight headway

M544A3_002
TAPE: 4
TIME ON TAPE: 0:36:55
POSITION OF SPLASHDOWN: upslope
COMMENTS: The boat makes straight headway

M544A3_003
TAPE: 4
TIME ON TAPE: 0:37:57
POSITION OF SPLASHDOWN: upslope
COMMENTS: The boat makes straight headway

M544A3_004
TAPE: 4
TIME ON TAPE: 0:38:48
POSITION OF SPLASHDOWN: upslope
COMMENTS: The boat makes straight headway

M544A4_001
TAPE: 4
TIME ON TAPE: 0:41:35
POSITION OF SPLASHDOWN: upslope
SETBACK: ¼ boat length
COMMENTS: The boom did not release

M544A4_002
TAPE: 4
TIME ON TAPE: 0:42:19
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ boat length
COMMENTS: The boat makes straight headway

M544A4_003
TAPE: 4
TIME ON TAPE: 0:43:30
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ boat length
COMMENTS: The boat makes straight headway

M544A4_004
TAPE: 4
TIME ON TAPE: 0:44:20
POSITION OF SPLASHDOWN: upslope
SETBACK: ¼ boat length
COMMENTS: The boom did not release

M544A4_005
TAPE: 4
TIME ON TAPE: 0:45:06
POSITION OF SPLASHDOWN: upslope
SETBACK: very small amount
COMMENTS: The boat makes straight headway

M544A4_006
TAPE: 4
TIME ON TAPE: 0:45:59
POSITION OF SPLASHDOWN: upslope
SETBACK: very small amount
COMMENTS: The boat makes straight headway

M544A5_001
TAPE: 4
TIME ON TAPE: 0:46:46
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: The boat makes contact with the crest on the way down, is suspended and splashes down on the upslope. The boat moves away to starboard

M544A5_002
TAPE: 4
TIME ON TAPE: 0:47:32
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: The boat makes contact with the crest and then splashes down on the upslope

M544A5_003
TAPE: 4
TIME ON TAPE: 0:48:19
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: The boat makes contact with the crest and then splashes down on the upslope, and makes straight headway

M544A5_004
TAPE: 4
TIME ON TAPE: 0:49:07
POSITION OF SPLASHDOWN: upslope
SETBACK: very small amount
COMMENTS: The boat makes straight headway

M544A5_005
TAPE: 4
TIME ON TAPE: 0:49:51
POSITION OF SPLASHDOWN: upslope
SETBACK: very small amount
COMMENTS: The boat makes straight headway

M544A6_001
TAPE: 4
TIME ON TAPE: 0:50:37
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: The boat makes contact with the crest and lands on the upslope, and moves away to the starboard

M544A6_002
TAPE: 4
TIME ON TAPE: 0:51:26
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544A6_003
TAPE: 4
TIME ON TAPE: 0:52:07
POSITION OF SPLASHDOWN: crest
SETBACK: ¼ boat length
COMMENTS: The boat makes straight headway

M544A6_004
TAPE: 4
TIME ON TAPE: 0:52:45
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: The boat makes contact with the crest and lands on the upslope, and makes straight headway

B Series

M544B1_001
TAPE: 5
TIME ON TAPE: 1:08:24
COMMENTS: turned upon splashdown

M544B1_001
TAPE: 5
TIME ON TAPE: 1:31:21
COMMENTS: turned (75°) upon splashdown

M544B1_002
TAPE: 5
TIME ON TAPE: 1:09:08
COMMENTS: turned upon splashdown

M544B1_003
TAPE: 5
TIME ON TAPE: 1:09:46
COMMENTS: turned upon splashdown

M544B1_004
TAPE: 5
TIME ON TAPE: 1:10:17
COMMENTS: turned (75°) upon splashdown

M544B1_005
TAPE: 5
TIME ON TAPE: 1:10:59
COMMENTS: turned (75°) upon splashdown

M544B2_001
TAPE: 5
TIME ON TAPE: 1:11:34
POSITION OF SPLASHDOWN: crest
COMMENTS: turned, but davits didn't release

M544B2_002
TAPE: 5
TIME ON TAPE: 1:12:49
POSITION OF SPLASHDOWN: crest
COMMENTS: turned 1 boat length after splashdown

M544B2_003
TAPE: 5
TIME ON TAPE: 1:13:55
POSITION OF SPLASHDOWN: crest
COMMENTS: turned upon splashdown

M544B2_004
TAPE: 5
TIME ON TAPE: 1:15:08
POSITION OF SPLASHDOWN: crest
COMMENTS: turned upon splashdown

M544B2_005
TAPE: 5
TIME ON TAPE: 1:16:18
POSITION OF SPLASHDOWN: crest
COMMENTS: turned (>90°) upon splashdown, goes 2 boat lengths and straightens

M544B3_001
TAPE: 5
TIME ON TAPE: 1:17:30
POSITION OF SPLASHDOWN: trough
COMMENTS: The boat makes contact with the crest and lands in the trough, turned (75°) upon splashdown

M544B3_002
TAPE: 5
TIME ON TAPE: 1:18:10
POSITION OF SPLASHDOWN: upslope
COMMENTS: The boat makes contact with the crest and lands on the upslope, turned (75°) upon splashdown

M544B3_003
TAPE: 5
TIME ON TAPE: 1:19:08
POSITION OF SPLASHDOWN: crest
COMMENTS: Turned (75°) upon splashdown

M544B3_004 (named M544B3_003 on tape)
TAPE: 5
TIME ON TAPE: 1:19:54
POSITION OF SPLASHDOWN: trough
COMMENTS: The boat makes contact with the crest and lands in the trough, turned (75°) upon splashdown

M544B4_001
TAPE: 5
TIME ON TAPE: 1:20:56
POSITION OF SPLASHDOWN: crest
COMMENTS: Turned (75°) upon splashdown

M544B4_002
TAPE: 5
TIME ON TAPE: 1:21:45
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: The boom releases on splashdown, turned at the end of the platform

M544B4_003
TAPE: 5
TIME ON TAPE: 1:22:26
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: Turned (75°) upon splashdown

M544B4_004
TAPE: 5
TIME ON TAPE: 1:23:18
POSITION OF SPLASHDOWN: crest
COMMENTS: Turned (75°) upon splashdown

M544B4_005
TAPE: 5
TIME ON TAPE: 1:23:59
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: Turned (70°) upon splashdown

M544B5_001
TAPE: 5
TIME ON TAPE: 1:24:43
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: Turned (75°) upon splashdown

M544B5_002
TAPE: 5
TIME ON TAPE: 1:25:23
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Turns (>90°) but is still connected, contacts the upslope and is setback 1 boat length

M544B5_003
TAPE: 5
TIME ON TAPE: 1:26:14
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Turned (50°) upon splashdown

M544B5_004
TAPE: 5
TIME ON TAPE: 1:26:57
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: The boat makes contact with the crest, lands on the upslope and gets pushed back ½ beam. Turned upon splashdown

M544B5_005
TAPE: 5
TIME ON TAPE: 1:27:38
POSITION OF SPLASHDOWN: upslope
SETBACK: 1-½ lengths
COMMENTS: The boat makes contact with the crest, lands on the upslope and pushed back ½ beam.

M544B6_001
TAPE: 5
TIME ON TAPE: 1:28:25
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Turned upon splashdown

M544B6_002
TAPE: 5
TIME ON TAPE: 1:29:11
POSITION OF SPLASHDOWN: upslope
SETBACK: 1-½ lengths
COMMENTS: The boat makes contact with the crest, lands on the upslope and pushed back ½ beam. Turned 1 length past the end of the platform

M544B6_003
TAPE: 5
TIME ON TAPE: 1:29:54
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: The boat makes contact with the crest, lands on the upslope and pushed back 1 beam. Turned upon splashdown

M544B6_004
TAPE: 5
TIME ON TAPE: 1:30:40
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: The boat makes contact with the crest, lands on the upslope and pushed back 1 beam. Turned upon splashdown

C Series

M544C1_001
TAPE: 6
TIME ON TAPE: 1:22:25
COMMENTS: Moves away with a straight heading

M544C1_002
TAPE: 6
TIME ON TAPE: 1:23:05
COMMENTS: Moves away with a straight heading, veering to starboard near the end of the screen

M544C1_003
TAPE: 6
TIME ON TAPE: 1:23:34
COMMENTS: Moves away with a straight heading, veering to starboard near then end of the screen.

M544C1_004 (named M544C1_003 on tape)
TAPE: 6
TIME ON TAPE: 1:24:06
POSITION OF SPLASHDOWN: trough
SETBACK: ½ length
COMMENTS: Contacts crest but releases in trough. Moves away with a straight heading

M544C1_004
TAPE: 7
TIME ON TAPE: 0:08:07
COMMENTS: Moves away with a straight heading

M544C4_002
TAPE: 6
TIME ON TAPE: 1:24:50
POSITION OF SPLASHDOWN: upslope
COMMENTS: Moves away slightly to port

M544C4_003
TAPE: 6
TIME ON TAPE: 1:25:35
POSITION OF SPLASHDOWN: upslope
COMMENTS: Moves away slightly to port

M544C4_004
TAPE: 6
TIME ON TAPE: 1:26:12
POSITION OF SPLASHDOWN: crest
COMMENTS: Moves away slightly to port

M544C4_005
TAPE: 6
TIME ON TAPE: 1:26:58
POSITION OF SPLASHDOWN: upslope
COMMENTS: Moves away with a straight heading

M544C5_001
TAPE: 7
TIME ON TAPE: 0:00:00
POSITION OF SPLASHDOWN: upslope
COMMENTS: *Boom didn't release*

M544C5_002
TAPE: 7
TIME ON TAPE: 0:00:57
POSITION OF SPLASHDOWN: upslope
SETBACK: very small amount
COMMENTS: Moves away with a straight heading, slightly to starboard

M544C5_003
TAPE: 7
TIME ON TAPE: 0:01:38
POSITION OF SPLASHDOWN: upslope
SETBACK: very small amount
COMMENTS: Moves away with a straight heading, slightly to starboard

M544C5_004
TAPE: 7
TIME ON TAPE: 0:02:15
POSITION OF SPLASHDOWN: crest
COMMENTS: Moves away with a straight heading

M544C5_005
TAPE: 7
TIME ON TAPE: 0:03:06
POSITION OF SPLASHDOWN: crest
COMMENTS: *Boom didn't release*

M544C6_001
TAPE: 7
TIME ON TAPE: 0:03:55
POSITION OF SPLASHDOWN: crest
COMMENTS: Moves away with a straight heading

M544C6_002
TAPE: 7
TIME ON TAPE: 0:04:31
POSITION OF SPLASHDOWN: upslope
COMMENTS: Moves away with a straight heading

M544C6_003
TAPE: 7
TIME ON TAPE: 0:05:12
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: *Boom didn't release*

M544C6_004
TAPE: 7
TIME ON TAPE: 0:06:12
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away slightly to starboard

M544C6_005
TAPE: 7
TIME ON TAPE: 0:06:54
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: *Boom didn't release*

M544C6_006
TAPE: 7
TIME ON TAPE: 0:07:37
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: *Boom didn't release*

D Series

M544D1_001
TAPE: 6
TIME ON TAPE: 0:59:05
COMMENTS: Moves away with a straight heading

M544D1_002
TAPE: 6
TIME ON TAPE: 0:59:32
COMMENTS: Moves away with a straight heading

M544D1_003
TAPE: 6
TIME ON TAPE: 1:00:04
COMMENTS: Moves away with a straight heading

M544D1_004
TAPE: 6
TIME ON TAPE: 1:09:49
COMMENTS: Moves away with a straight heading

M544D4_001
TAPE: 6
TIME ON TAPE: 1:00:38
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Contacts crest but releases on upslope. Moves away with a straight heading

M544D4_002
TAPE: 6
TIME ON TAPE: 1:01:28
POSITION OF SPLASHDOWN: crest
COMMENTS: Veers to port as it moves away

M544D4_003
TAPE: 6
TIME ON TAPE: 1:02:02
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Contacts crest but releases on upslope. Veers to starboard as it moves away

M544D4_004
TAPE: 6
TIME ON TAPE: 1:02:36
POSITION OF SPLASHDOWN: crest
COMMENTS: Veers to port as it moves away

M544D5_001
TAPE: 6
TIME ON TAPE: 1:03:15
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away with a straight heading

M544D5_002
TAPE: 6
TIME ON TAPE: 1:03:57
POSITION OF SPLASHDOWN: crest
COMMENTS: Moves away with a straight heading

M544D5_003
TAPE: 6
TIME ON TAPE: 1:04:40
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Contacts crest and releases on upslope. Veers starboard as it moves away

M544D5_004
TAPE: 6
TIME ON TAPE: 1:05:19
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Contacts crest and releases on upslope. Moves away with a straight heading

M544D6_001
TAPE: 6
TIME ON TAPE: 1:05:56
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: Veers port as it moves away

M544D6_002
TAPE: 6
TIME ON TAPE: 1:06:40
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: Veers starboard as it moves away

M544D6_003
TAPE: 6
TIME ON TAPE: 1:07:22
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: *Boom didn't release*

M544D6_004
TAPE: 6
TIME ON TAPE: 1:08:05
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: *Boom didn't release*

M544D6_005
TAPE: 6
TIME ON TAPE: 1:09:10
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away with a straight heading

E Series

M544E1_001
TAPE: 7
TIME ON TAPE: 0:21:16
COMMENTS: Turned (80°) upon splashdown

M544E1_002
TAPE: 7
TIME ON TAPE: 0:21:49
COMMENTS: Turned (80°) upon splashdown

M544E1_003
TAPE: 7
TIME ON TAPE: 0:22:19
COMMENTS: Turned (80°) upon splashdown

M544E1_004
TAPE: 7
TIME ON TAPE: 0:32:54
COMMENTS: Moves away slightly to starboard

M544E4_001
TAPE: 7
TIME ON TAPE: 0:22:51
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ beam
COMMENTS: Turns at the end of the platform

M544E4_002
TAPE: 7
TIME ON TAPE: 0:23:35
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ beam
COMMENTS: Turns at the end of the platform

M544E4_003
TAPE: 7
TIME ON TAPE: 0:24:22
POSITION OF SPLASHDOWN: crest
COMMENTS: Progressive setback occurs. *Boom release was delayed*

M544E4_004
TAPE: 7
TIME ON TAPE: 0:25:09
POSITION OF SPLASHDOWN: trough
SETBACK: 1 ½ beam
COMMENTS: Contacts crest but lands in trough. Turns and moves away

M544E5_001
TAPE: 7
TIME ON TAPE: 0:25:53
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 beam
COMMENTS: Turns (70°) and moves away

M544E5_002
TAPE: 7
TIME ON TAPE: 0:26:34
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 beam
COMMENTS: Turns near end of platform and moves away

M544E5_003
TAPE: 7
TIME ON TAPE: 0:27:16
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam
COMMENTS: Turns upon splashdown and moves away

M544E5_004
TAPE: 7
TIME ON TAPE: 0:27:57
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ beam
COMMENTS: Turns upon splashdown and moves away

M544E5_005
TAPE: 7
TIME ON TAPE: 0:28:36
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ beam
COMMENTS: Turns upon splashdown and moves away

M544E6_001
TAPE: 7
TIME ON TAPE: 0:29:19
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Aft almost makes contact with the platform. Turns (90°) upon splashdown

M544E6_002
TAPE: 7
TIME ON TAPE: 0:29:59
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Contacts crest but lands on upslope, aft almost contacts platform. Turns upon splashdown

M544E6_003
TAPE: 7
TIME ON TAPE: 0:30:41
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam
COMMENTS: Turns upon splashdown and moves away slightly to the starboard

M544E6_004
TAPE: 7
TIME ON TAPE: 0:31:19
POSITION OF SPLASHDOWN: trough
SETBACK: 3 beam
COMMENTS: *Cables didn't release.* Boat hits upslope, pushed back 2 beam, but is still suspended and lands in the trough. Moves away slightly to port

M544E6_005
TAPE: 7
TIME ON TAPE: 0:32:16
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam
COMMENTS: Moves away slightly to starboard

F Series

M544F1_001
TAPE: 6
TIME ON TAPE: 0:34:56
COMMENTS: Turns (45°) upon splashdown

M544F1_002
TAPE: 6
TIME ON TAPE: 0:35:22
COMMENTS: Turns (80°) upon splashdown

M544F1_003
TAPE: 6
TIME ON TAPE: 0:35:57
COMMENTS: Turns (50°) upon splashdown

M544F1_004
TAPE: 6
TIME ON TAPE: 0:40:59
COMMENTS: Turns (55°) upon splashdown

M544F1_005
TAPE: 6
TIME ON TAPE: 0:41:34
COMMENTS: Turns (55°) upon splashdown

M544F4_001
TAPE: 6
TIME ON TAPE: 0:36:24
POSITION OF SPLASHDOWN: crest
COMMENTS: Aft hits upslope, bow lands on crest, turns (80°) upon splashdown

M544F4_002
TAPE: 6
TIME ON TAPE: 0:37:09
POSITION OF SPLASHDOWN: crest
COMMENTS: Aft hits upslope, bow lands on crest, turns (80°) upon splashdown

M544F4_003
TAPE: 6
TIME ON TAPE: 0:37:55
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ beam
COMMENTS: Aft lands on crest, boat swings around, goes back parallel and lands n upslope. Turns (80°) upon splashdown

M544F4_004
TAPE: 6
TIME ON TAPE: 0:38:41
POSITION OF SPLASHDOWN: upslope
SETBACK 1 ½ beam
COMMENTS: Aft hits crest, swings out and back parallel when it lands on upslope. Turns and leaves, turns back then straight again.

M544F5_001
TAPE: 6
TIME ON TAPE: 0:39:28
POSITION OF SPLASHDOWN: crest
SETBACK: 1 ½ beam
COMMENTS: Aft hits upslope, swings around and bow lands on crest, turns (75°) and leaves.

M544F5_002
TAPE: 6
TIME ON TAPE: 0:40:20
POSITION OF SPLASHDOWN: down slope
COMMENTS: Aft hits upslope, swings around and bow lands on down slope. Turns at end of platform

M544F5_003
TAPE: 6
TIME ON TAPE: 0:42:09
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ beam
COMMENTS: Aft hits upslope, bow lands 5 sec after. Turns (80°) upon splashdown

M544F5_004
TAPE: 6
TIME ON TAPE: 0:42:55
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam
COMMENTS: Aft hits upslope, bow lands 3 sec after. Turns (80°) upon splashdown

M544F6_001
TAPE: 6
TIME ON TAPE: 0:43:40
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Turns (80°) upon splashdown

M544F6_002
TAPE: 6
TIME ON TAPE: 0:44:26
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Turns (90°) upon splashdown

M544F6_003
TAPE: 6
TIME ON TAPE: 0:45:12
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Turns (90°) upon splashdown, drifts to port as it moves away

M544F6_004
TAPE: 6
TIME ON TAPE: 0:45:58
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Turns (90°) upon splashdown. Goes from port to starboard as it moves away.

G Series

M544G1_001
TAPE: 4
TIME ON TAPE: 1:17:54
COMMENTS: The boat makes straight headway

M544G1_002
TAPE: 4
TIME ON TAPE: 1:18:25
COMMENTS: The boat makes straight headway

M544G1_003
TAPE: 4
TIME ON TAPE: 1:18:56
COMMENTS: The boat makes straight headway

M544G1_004
TAPE: 5
TIME ON TAPE: 0:08:05
COMMENTS: The boat makes straight headway

M544G2_001
TAPE: 4
TIME ON TAPE: 1:19:36
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544G2_002
TAPE: 4
TIME ON TAPE: 1:21:04
COMMENTS: The boat makes straight headway

M544G2_003
TAPE: 4
TIME ON TAPE: 1:22:18
COMMENTS: The boat makes straight headway

M544G2_004
TAPE: 4
TIME ON TAPE: 1:23:35
COMMENTS: The boat makes straight headway

M544G3_001
TAPE: 4
TIME ON TAPE: 1:24:51
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544G3_002
TAPE: 4
TIME ON TAPE: 1:25:42
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544G3_003
TAPE: 4
TIME ON TAPE: 1:26:42
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544G3_004
TAPE: 4
TIME ON TAPE: 1:27:28
POSITION OF SPLASHDOWN: upslope
COMMENTS: The boat makes straight headway

M544G4_001
TAPE: 5
TIME ON TAPE: 0:00:00
POSITION OF SPLASHDOWN: upslope
COMMENTS: The boat makes straight headway

M544G4_002
TAPE: 5
TIME ON TAPE: 0:00:47
POSITION OF SPLASHDOWN: upslope
COMMENTS: The boat makes straight headway

M544G4_003
TAPE: 5
TIME ON TAPE: 0:01:35
POSITION OF SPLASHDOWN: trough
SETBACK: ½ boat length
COMMENTS: The boat makes contact with the crest and lands in the trough, and makes straight headway

M544G4_004
TAPE: 5
TIME ON TAPE: 0:02:20
POSITION OF SPLASHDOWN: trough
SETBACK: ½ boat length
COMMENTS: The boat makes contact with the crest and lands in the trough, and makes straight headway

M544G5_001
TAPE: 5
TIME ON TAPE: 0:03:04
POSITION OF SPLASHDOWN: upslope
SETBACK: ¼ boat length
COMMENTS: The boat makes straight headway

M544G5_002
TAPE: 5
TIME ON TAPE: 0:03:46
POSITION OF SPLASHDOWN: upslope
SETBACK: 1/3 boat length
COMMENTS: The boat makes straight headway

M544G5_003
TAPE: 5
TIME ON TAPE: 0:04:34
POSITION OF SPLASHDOWN: trough
SETBACK: ½ boat length
COMMENTS: The boat makes contact with the crest and lands in the trough, and moves away to the starboard

M544G5_004
TAPE: 5
TIME ON TAPE: 0:05:22
POSITION OF SPLASHDOWN: trough
SETBACK: 1 boat length
COMMENTS: The boat makes contact with the crest and lands in the trough, and makes straight headway

M544G6_002
TAPE: 5
TIME ON TAPE: 0:06:11
POSITION OF SPLASHDOWN: crest
SETBACK: 1/3 boat length
COMMENTS: The boat moves away to the port side

M544G6_003
TAPE: 5
TIME ON TAPE: 0:06:46
POSITION OF SPLASHDOWN: trough
SETBACK: 1 boat length
COMMENTS: The boat makes contact with the crest and lands in the trough, and moves away slightly to the starboard

M544G6_004
TAPE: 5
TIME ON TAPE: 0:07:24
POSITION OF SPLASHDOWN: trough
SETBACK: ½ boat length
COMMENTS: The boat makes contact with the crest and lands in the trough, and makes straight headway

H Series

M544H1_001
TAPE: 4
TIME ON TAPE: 0:54:13
COMMENTS: The boat makes straight headway

M544H1_002
TAPE: 4
TIME ON TAPE: 0:54:52
COMMENTS: The boat makes straight headway

M544H1_003
TAPE: 4
TIME ON TAPE: 0:55:24
COMMENTS: The boat makes straight headway

M544H1_005
TAPE: 4
TIME ON TAPE: 1:16:18
COMMENTS: The boat makes straight headway

M544H1_006
TAPE: 4
TIME ON TAPE: 1:00:55
COMMENTS: The boat makes straight headway

M544H2_001
TAPE: 4
TIME ON TAPE: 0:55:57
POSITION OF SLPASHDOWN: crest
COMMENTS: The boat makes straight headway

M544H2_002
TAPE: 4
TIME ON TAPE: 0:57:07
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544H2_003
TAPE: 4
TIME ON TAPE: 0:58:21
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544H2_004
TAPE: 4
TIME ON TAPE: 0:59:39
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544H3_001
TAPE: 4
TIME ON TAPE: 1:01:22
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544H3_002
TAPE: 4
TIME ON TAPE: 1:02:30
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: The boat makes straight headway

M544H3_003
TAPE: 4
TIME ON TAPE: 1:03:25
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat moves away in an S fashion

M544H3_004
TAPE: 4
TIME ON TAPE: 1:04:32
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544H4_001
TAPE: 4
TIME ON TAPE: 1:05:17
POSITION OF SPLASHDOWN: trough
COMMENTS: The boat contacts the crest and lands in the trough, then makes straight headway

M544H4_002
TAPE: 4
TIME ON TAPE: 1:05:55
POSITION OF SPLASHDOWN: trough
SETBACK: 1 ½ boat length
COMMENTS: The boat makes contact with the crest and lands in the trough, progressive setback occurs, and then makes straight headway ***(Possible Impact)***

M544H4_003
TAPE: 4
TIME ON TAPE: 1:06:50
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat moves away in an S fashion

M544H4_004
TAPE: 4
TIME ON TAPE: 1:07:37
POSITION OF SPLASHDOWN: trough
SETBACK: 1 boat length
COMMENTS: The boat makes contact with the crest and lands in the trough, progressive setback occurs, and then makes straight headway

M544H5_001
TAPE: 4
TIME ON TAPE: 1:08:30
POSITION OF SPLASHDOWN: trough
COMMENTS: The boat makes contact with the crest, is suspended in the trough, the bow cable releases but the aft does not. ***IMPACT***

M544H5_002
TAPE: 4
TIME ON TAPE: 1:09:02
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat makes straight headway

M544H5_003
TAPE: 4
TIME ON TAPE: 1:10:02
POSITION OF SPLASHDOWN: crest
COMMENTS: The boat moves away in an S fashion

M544H5_004
TAPE: 4
TIME ON TAPE: 1:10:45
POSITION OF SPLASHDOWN: trough
COMMENTS: The boat makes contact with the crest and lands in the trough. ***IMPACT***

M544H5_005
TAPE: 4
TIME ON TAPE: 1:11:27
POSITION OF SPLASHDOWN: trough
COMMENTS: The boat makes contact with the crest and lands in the trough. ***IMPACT***

M544H6_001
TAPE: 4
TIME ON TAPE: 1:12:14
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ boat length
COMMENTS: The boat makes contact with the crest and is pushed back 1/3 boat length and lands on the upslope, progressive setback occurs, then moves away in an S fashion

M544H6_002
TAPE: 4
TIME ON TAPE: 1:13:10
POSITION OF SPLASHDOWN: crest
SETBACK: 1 boat length
COMMENTS: The aft cable didn't release and progressive setback occurs. It then turns starboard, straightens and moves away

M544H6_003
TAPE: 4
TIME ON TAPE: 1:14:02
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: Progressive setback occurs, turns starboard and then makes straight headway

M544H6_004
TAPE: 4
TIME ON TAPE: 1:14:47
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: Progressive setback occurs, turns starboard, port then makes straight headway

M544H6_005
TAPE: 4
TIME ON TAPE: 1:15:25
POSITION OF SPLASHDOWN: trough
SETBACK: ***POSSIBLE IMPACT***
COMMENTS: The boat makes contact with the crest and lands in the trough, progressive setback occurs, turns starboard and makes straight headway

I Series

M544I1_002
TAPE: 5
TIME ON TAPE: 0:30:14
COMMENTS: turned at end of platform

M544I1_004
TAPE: 5
TIME ON TAPE: 0:30:52
COMMENTS: turned at end of platform

M544I1_005
TAPE: 5
TIME ON TAPE: 0:31:29
COMMENTS: turned at end of platform

M544I1_006
TAPE: 5
TIME ON TAPE: 1:02:58
COMMENTS: turned 2 boat lengths past the end of platform

M544I1_007
TAPE: 5
TIME ON TAPE: 1:03:32
COMMENTS: turned at end of platform

M544I1_008
TAPE: 5
TIME ON TAPE: 1:07:10
COMMENTS: turned at end of platform

M544I2_001
TAPE: 5
TIME ON TAPE: 0:32:06
COMMENTS: *No launch*

M544I2_002
TAPE: 5
TIME ON TAPE: 0:33:27
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: turned at end of platform

M544I2_003
TAPE: 5
TIME ON TAPE: 0:34:32
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: Progressive setback occurs, turned at end of platform

M544I2_004
TAPE: 5
TIME ON TAPE: 0:35:45
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Progressive setback occurs, turned at end of platform

M544I2_005
TAPE: 5
TIME ON TAPE: 0:37:00
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: Progressive setback occurs. Turned 2 boat lengths past the end of the platform

M544I3_001
TAPE: 5
TIME ON TAPE: 0:38:11
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. The boat went parallel to the platform and went off the screen

M544I3_002
TAPE: 5
TIME ON TAPE: 0:39:07
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. The boat went parallel to the platform and went off the screen

M544I3_003
TAPE: 5
TIME ON TAPE: 0:40:02
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. Turned 2 boat lengths past the end of the platform

M544I3_004
TAPE: 5
TIME ON TAPE: 0:41:04
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. Turned 1 boat length past the end of the platform

M544I4_001
TAPE: 5
TIME ON TAPE: 0:41:56
POSITION OF SPLASHDOWN: crest
COMMENTS: Progressive setback occurs. Turned ½ boat length past the end of the platform

M544I4_002
TAPE: 5
TIME ON TAPE: 0:42:48
POSITION OF SPLASHDOWN: crest
SETBACK: 2 beam
COMMENTS: Progressive setback occurs. Turned ½ boat lengths past the end of the platform. ***(CLOSE TO IMPACT)***

M544I4_003
TAPE: 5
TIME ON TAPE: 0:43:40
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: Progressive setback occurs. Turned 2 boat lengths past the end of the platform

M544I4_004
TAPE: 5
TIME ON TAPE: 0:44:26
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 beam
COMMENTS: The boat makes contact with the crest and lands on the upslope, progressive setback occurs. Turned at the end of the platform ***(POSSIBLE IMPACT ON PROGRESSIVE WAVES)***

M544I5_001
TAPE: 5
TIME ON TAPE: 0:44:15
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: Progressive setback occurs. Turned ½ boat length past the end of the platform

M544I5_002
TAPE: 5
TIME ON TAPE: 0:46:06
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam
COMMENTS: Progressive setback occurs. Turned 2 boat lengths past the end of the platform ***IMPACT ON PROGRESSIVE WAVE***

M544I5_003
TAPE: 5
TIME ON TAPE: 0:46:57
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Progressive setback occurs. Turned 1 boat length past the end of the platform ***IMPACT ON PROGRESSIVE WAVE***

M544I5_004
TAPE: 5
TIME ON TAPE: 1:02:03
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: Progressive setback occurs. Turned ½ boat lengths past the end of the platform

M544I6_001
TAPE: 5
TIME ON TAPE: 1:04:06
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: Progressive setback occurs. The boat went parallel to the platform and went off the screen ***IMPACT ON PROGRESSIVE WAVE***

M544I6_002
TAPE: 5
TIME ON TAPE: 1:05:15
POSITION OF SPLASHDOWN: upslope
SETBACK: 3 beam
COMMENTS: Progressive setback occurs. The boat went parallel to the platform and went off the screen ***IMPACT ON PROGRESSIVE WAVE***

M544I6_003
TAPE: 5
TIME ON TAPE: 1:06:09
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam
COMMENTS: Progressive setback occurs. The boat went parallel to the platform and went off the screen ***IMPACT ON PROGRESSIVE WAVE***

J Series

M544J1_001
TAPE: 6
TIME ON TAPE: 1:10:35
COMMENTS: Moves away slightly to starboard

M544J1_002
TAPE: 6
TIME ON TAPE: 1:11:05
COMMENTS: Moves away slightly to starboard

M544J1_003
TAPE: 6
TIME ON TAPE: 1:11:38
COMMENTS: Moves away with a straight heading

M544J4_001
TAPE: 6
TIME ON TAPE: 1:12:20
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: Moves away with a straight heading

M544J4_002
TAPE: 6
TIME ON TAPE: 1:13:02
POSITION OF SPLASHDOWN: trough
SETBACK: 1 ½ lengths close to impact
COMMENTS: Contacts crest but releases in the trough. Moves away with a straight heading

M544J4_003
TAPE: 6
TIME ON TAPE: 1:13:58
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ lengths
COMMENTS: Contacts crest but releases on upslope. Progressive setback occurs. Moves away with a straight heading

M544J4_004
TAPE: 6
TIME ON TAPE: 1:14:50
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Veers to starboard, straightens, then moves away with a straight heading

M544J5_001
TAPE: 6
TIME ON TAPE: 1:15:39
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Veers to starboard as it moves away

M544J5_002
TAPE: 6
TIME ON TAPE: 1:16:22
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Moves away slightly to starboard

M544J5_003
TAPE: 6
TIME ON TAPE: 1:17:06
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: Moves away slightly to starboard

M544J5_004
TAPE: 6
TIME ON TAPE: 1:17:50
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: Moves away slightly to starboard

M544J5_005
TAPE: 6
TIME ON TAPE: 1:18:45
POSITION OF SPLASHDOWN: trough
COMMENTS: Contacts crest but releases in trough. Moves away slightly to starboard

M544J6_001
TAPE: 6
TIME ON TAPE: 1:19:29
POSITION OF SPLASHDOWN: upslope
SETBACK: ***Possible Impact***
COMMENTS: Moves away slightly to starboard

M544J6_002
TAPE: 6
TIME ON TAPE: 1:20:15
POSITION OF SPLASHDOWN: upslope
SETBACK: close to impact
COMMENTS: Moves away slightly to port

M544J6_003
TAPE: 6
TIME ON TAPE: 1:21:02
POSITION OF SPLASHDOWN: upslope
SETBACK: ***Possible Impact***
COMMENTS: Moves away slightly to starboard

M544J6_004
TAPE: 6
TIME ON TAPE: 1:21:45
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: Moves away slightly to starboard

K Series

M544K1_001
TAPE: 6
TIME ON TAPE: 0:46:49
COMMENTS: Bow touches down first, then moves away with a straight heading

M544K1_002
TAPE: 6
TIME ON TAPE: 0:46:18
COMMENTS: Bow touches down first, ***cable didn't release,*** then moves away with a straight heading

M544K1_003
TAPE: 6
TIME ON TAPE: 0:47:59
COMMENTS: Bow touches down first, then moves away with a straight heading

M544K1_004
TAPE: 6
TIME ON TAPE: 0:58:29
COMMENTS: Moves away with a straight heading

M544K4_001
TAPE: 6
TIME ON TAPE: 0:48:32
POSITION OF SPLASHDOWN: bow hits crest
SETBACK: very small amount
COMMENTS: Bow touches down first, then moves away with a straight heading

M544K4_002
TAPE: 6
TIME ON TAPE: 0:49:20
POSITION OF SPLASHDOWN: bow hits crest
COMMENTS: Bow touches down first, then moves away with a straight heading, moving slightly to the starboard

M544K4_003
TAPE: 6
TIME ON TAPE: 0:50:02
POSITION OF SPLASHDOWN: bow hits upslope
SETBACK: ½ length
COMMENTS: Bow touches down first, then moves away with a straight heading, moving slightly to the port side

M544K4_004
TAPE: 6
TIME ON TAPE: 0:50:48
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Bow contacts crest, and then lands on upslope. Progressive setback occurs. The boat then moves away with a straight heading

M544K4_005
TAPE: 6
TIME ON TAPE: 0:51:41
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Bow contacts crest, and then lands on upslope. Progressive setback occurs. The boat then moves away with a straight heading

M544K5_001
TAPE: 6
TIME ON TAPE: 0:52:39
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: Moves away with a straight heading

M544K5_002
TAPE: 6
TIME ON TAPE: 0:53:22
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Moves away with a straight heading, slightly to starboard

M544K5_003
TAPE: 6
TIME ON TAPE: 0:54:03
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Moves away with a straight heading, slightly to port

M544K5_004
TAPE: 6
TIME ON TAPE: 0:54:44
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: Moves away with a fairly straight heading, with a small

M544K6_001
TAPE: 6
TIME ON TAPE: 0:55:25
POSITION OF SPLASHDOWN: trough
SETBACK: ½ length
COMMENTS: Bow touches down on the crest, still suspended then lands in the trough. Progressive setback occurs. The boat then veers starboard as it moves away

M544K6_002
TAPE: 6
TIME ON TAPE: 0:56:11
POSITION OF SPLASHDOWN: trough
SETBACK: ½ length
COMMENTS: Bow touches down on the crest, still suspended then lands in the trough. Progressive setback occurs. The boat then moves from side to side as it moves away

M544K6_003
TAPE: 6
TIME ON TAPE: 0:56:59
POSITION OF SPLASHDOWN: crest
SETBACK: 1 length
COMMENTS: Progressive setback occurs. The boat then veers towards port as it moves away

M544K6_004
TAPE: 6
TIME ON TAPE: 0:57:43
POSITION OF SPLASHDOWN: upslope
SETBACK: close to impact
COMMENTS: The boat veers to port as it moves away

L Series

M544L4_004
TAPE: 7
TIME ON TAPE: 0:08:37
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam
COMMENTS: Bow turned towards the platform and progressive setback occurs. Turns at end of platform and moves away. ***Possible Impact on progressive wave***

M544L1_001
TAPE: 7
TIME ON TAPE: 0:09:24
COMMENTS: Turns at end of platform and moves away

M544L4_002
TAPE: 7
TIME ON TAPE: 0:10:03
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ beam
COMMENTS: Bow turns towards platform and progressive setback occurs. Turns ½ boat length past end of platform and moves away. ***Possible Impact on progressive waves (X2)***

M544L4_003
TAPE: 7
TIME ON TAPE: 0:10:49
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ beam
COMMENTS: Bow turns towards platform and progressive setback occurs. Turns ½ boat length past end of platform and moves away.

M544L1_002
TAPE: 7
TIME ON TAPE: 0:11:35
COMMENTS: Turns at the end of the platform

M544L1_003
TAPE: 7
TIME ON TAPE: 0:12:18
COMMENTS: Turns at the end of the platform

M544L4_004
TAPE: 7
TIME ON TAPE: 0:12:54
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam, close to impact
COMMENTS: Turns ½ boat length past the end, comes back and then moves away perpendicular to the platform

M544L5_001
TAPE: 7
TIME ON TAPE: 0:13:45
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam
COMMENTS: Bow turns towards the platform. Turns 2 boat lengths past the end. ***IMPACT on progressive wave***

M544L5_002
TAPE: 7
TIME ON TAPE: 0:14:34
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Goes straight and leaves the screen. ***BAD IMPACT on progressive wave (X2)***

M544L5_003 (named M544L5_002 on tape)
TAPE: 7
TIME ON TAPE: 0:15:29
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Goes straight and leaves the screen. ***BAD IMPACT on progressive wave (X2)***

M544L5_004
TAPE: 7
TIME ON TAPE: 0:16:27
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ beam
COMMENTS: Bow turns towards platform. Close to impact on progressive wave. Turns at the end of the platform

M544L6_001
TAPE: 7
TIME ON TAPE: 0:17:17
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Turns 2 lengths past end of platform. ***BAD IMPACT on progressive wave***

M544L6_002
TAPE: 7
TIME ON TAPE: 0:18:07
POSITION OF SPLASHDOWN: upslope
SETBACK: ***IMPACT***
COMMENTS: Turns 1 boat length past the end of the platform

M544L6_003
TAPE: 7
TIME ON TAPE: 0:18:58
POSITION OF SPLASHDOWN: upslope
SETBACK: ***IMPACT (X2)***
COMMENTS: Turns 1 length past end of the platform

M544L6_004
TAPE: 7
TIME ON TAPE: 0:19:49
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ beam
COMMENTS: Goes straight and leaves screen. ***BAD IMPACT on progressive***

M544L1_004
TAPE: 7
TIME ON TAPE: 0:20:45
COMMENTS: Turns at the end of the platform

M Series

M544M1_001
TAPE: 6
TIME ON TAPE: 0:17:09
COMMENTS: Aft landed before bow. Turned at end of platform.

M544M1_002
TAPE: 6
TIME ON TAPE: 0:17:52
COMMENTS: Aft landed before bow. Turned at end of platform.

M544M1_003
TAPE: 6
TIME ON TAPE: 0:18:34
COMMENTS: Aft landed before bow. Turned at end of platform.

M544M1_004
TAPE: 6
TIME ON TAPE: 0:21:16
COMMENTS: Turned at end of platform.

M544M1_005
TAPE: 6
TIME ON TAPE: 0:21:57
COMMENTS: Turned at end of platform.

M544M1_006
TAPE: 6
TIME ON TAPE: 0:22:38
COMMENTS: Turned at end of platform.

M544M1_007
TAPE: 6
TIME ON TAPE: 0:34:17
COMMENTS: Turned upon splashdown

M544M4_001
TAPE: 6
TIME ON TAPE: 0:19:17
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. Turned at end of platform.

M544M4_002
TAPE: 6
TIME ON TAPE: 0:20:25
POSITION OF SPLASHDOWN: trough
SETBACK: 1 beam
COMMENTS: Aft contacts crest, bow lands in trough and the boat gets pushed back 2 widths. Progressive setback occurs, close to impact. Turned at end of platform.

M544M4_003
TAPE: 6
TIME ON TAPE: 0:23:18
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 beam
COMMENTS: Aft lands on upslope, the bow lands on the same upslope. Progressive setback occurs. Turned at end of platform.

M544M4_004
TAPE: 6
TIME ON TAPE: 0:24:11
POSITION OF SPLASHDOWN: crest
SETBACK: ½ beam
COMMENTS: Aft hits crest and swings around. The boat swings towards the platform and the bow lands in the upslope. Progressive setback occurs. Turned past the end of the platform, came back then went straight. ***IMPACT ON PROGRESSIVE WAVE***

M544M4_005
TAPE: 6
TIME ON TAPE: 0:25:00
POSITION OF SPLASHDOWN: crest
SETBACK: 3 beam
COMMENTS: Aft hits crest, the boat swings and the bow lands on the upslope. Progressive setback occurs. Turned past the end of the platform, came back then went straight. ***IMPACT ON PROGRESSIVE WAVE***

M544M4_006
TAPE: 6
TIME ON TAPE: 0:27:34
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam
COMMENTS: Aft hits crest, swings out and then back parallel to the platform, then bow lands on the upslope Progressive setback occurs, close to impact. Turned past the end of the platform, came back then went straight.

M544M4_007
TAPE: 6
TIME ON TAPE: 0:28:25
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Aft lands on upslope, the boat swings and the bow lands on the crest. Turned just before the end of the platform.

M544M5_001
TAPE: 6
TIME ON TAPE: 0:25:52
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Aft hits upslope, the boat swings and the bow. Progressive setback occurs. Turned past the end of the platform, came back then went straight. ***IMPACT ON PROGRESSIVE WAVE***

M544M5_002
TAPE: 6
TIME ON TAPE: 0:29:18
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Aft hits crest, the boat swings and the bow lands. Progressive setback occurs.

M544M5_003
TAPE: 6
TIME ON TAPE: 0:30:01
POSITION OF SPLASHDOWN: crest
SETBACK: 1 ½ beam
COMMENTS: Aft hits upslope, the boat swings and the bow lands on the crest. Progressive setback occurs. Turned past the end of the platform

M544M5_004
TAPE: 6
TIME ON TAPE: 0:30:45
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 beam
COMMENTS: Aft lands on upslope, the bow lands on the same upslope 4 sec later. Progressive setback occurs. Turned past the end of the platform. ***IMPACT ON PROGRESSIVE WAVE***

M544M6_001
TAPE: 6
TIME ON TAPE: 0:26:40
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Aft hits upslope, and boat turns 45°. Progressive setback occurs. Turned 1 length past the end of the platform.

M544M6_002
TAPE: 6
TIME ON TAPE: 0:31:35
POSITION OF SPLASHDOWN: crest
SETBACK: ***BAD IMPACT (X4)***
COMMENTS: Aft hits crest, the boat swings out, straightens and touches down in the trough. The bow lands on the upslope. Went straight and left the screen.

M544M6_003
TAPE: 6
TIME ON TAPE: 0:31:30
POSITION OF SPLASHDOWN: upslope
SETBACK: ***BAD IMPACT (X3)***
COMMENTS: Aft hits upslope, the bow lands 5 sec later. Progressive setback occurs. Went straight and left the screen.

M544M6_004
TAPE: 6
TIME ON TAPE: 0:33:34
POSITION OF SPLASHDOWN: crest
SETBACK: near impact
COMMENTS: Aft hits upslope, the bow lands on the crest. Progressive setback occurs. Turns 2 boat lengths past the end of the platform, comes back and goes straight.
IMPACT ON PROGRESSIVE WAVE.

N Series

M544N1_001
TAPE: 5
TIME ON TAPE: 1:31:53
COMMENTS: turned (75°) upon splashdown

M544N1_002
TAPE: 5
TIME ON TAPE: 1:32:21
COMMENTS: turned 1 length past the end of the platform

M544N1_003
TAPE: 5
TIME ON TAPE: 1:32:56
COMMENTS: turned 1 length past the end of the platform

M544N1_004
TAPE: 5
TIME ON TAPE: 1:35:45
COMMENTS: Davits didn't release right away. Turned at end of platform

M544N1_005
TAPE: 5
TIME ON TAPE: 1:36:19
COMMENTS: turned at end of platform

M544N1_006
TAPE: 6
TIME ON TAPE: 0:16:33
COMMENTS: turned at end of platform

M544N2_001
TAPE: 5
TIME ON TAPE: 1:33:26
COMMENTS: *No launch*

M544N2_002
TAPE: 5
TIME ON TAPE: 1:34:50
COMMENTS: *No launch*

M544N2_003
TAPE: 5
TIME ON TAPE: 1:36:55
COMMENTS: *Tape ran out*

M544N2_003
TAPE: 6
TIME ON TAPE: 0:02:25
POSITION OF SPLASHDOWN: upslope
SETBACK: 3 beam
COMMENTS: Progressive setback occurs. Turned at end of platform, comes back and then goes straight

M544N2_004
TAPE: 6
TIME ON TAPE: 0:00:00
POSITION OF SPLASHDOWN: crest
SETBACK: 2 beam
COMMENTS: Progressive setback occurs. Turned at end of platform, comes back and then goes straight

M544N2_005
TAPE: 6
TIME ON TAPE: 0:01:22
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. Turned at end of platform, comes back and then goes straight

M544N3_001
TAPE: 6
TIME ON TAPE: 0:03:27
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. Turned past end of platform, comes back and then goes straight

M544N3_002
TAPE: 6
TIME ON TAPE: 0:04:13
POSITION OF SPLASHDOWN: crest
COMMENTS: Progressive setback occurs. Turned past end of platform, comes back and then goes straight

M544N3_003
TAPE: 6
TIME ON TAPE: 0:05:07
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. Turned past end of platform, and moves away moving from side to side

M544N3_004
TAPE: 6
TIME ON TAPE: 0:05:58
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. Turned at end of platform, and moves away going from side to side

M544N4_001
TAPE: 6
TIME ON TAPE: 0:06:57
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. Turned at end of platform and then goes straight

M544N4_002
TAPE: 6
TIME ON TAPE: 0:07:45
POSITION OF SPLASHDOWN: trough
SETBACK: 3 beam
COMMENTS: The boat makes contact with the crest, lands in the trough. Progressive setback occurs. Turned at end of platform and then goes straight ***(Possible Impact on progressive wave)***

M544N4_003
TAPE: 6
TIME ON TAPE: 0:08:38
POSITION OF SPLASHDOWN: trough
SETBACK: 3 beam
COMMENTS: Progressive setback occurs. Turned past end of platform, comes back and then goes straight. ***IMPACT ON PROGRESSIVE WAVE***

M544N4_004
TAPE: 6
TIME ON TAPE: 0:09:30
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. Turned past end of platform, comes back and then goes straight

M544N5_001
TAPE: 6
TIME ON TAPE: 0:10:14
POSITION OF SPLASHDOWN: crest
SETBACK: 2 beam
COMMENTS: Progressive setback occurs, close to impact. Turned past end of platform, comes back and then goes straight

M544N5_002
TAPE: 6
TIME ON TAPE: 0:10:54
POSITION OF SPLASHDOWN: crest
SETBACK: 1 beam
COMMENTS: Progressive setback occurs. Turned past end of platform, comes back and then goes straight

M544N5_003
TAPE: 6
TIME ON TAPE: 0:11:41
POSITION OF SPLASHDOWN: upslope
SETBACK: 2 ½ beam
COMMENTS: Progressive setback occurs. Goes straight and leaves the screen and then comes back. ***IMPACT ON PROGRESSIVE WAVE***

M544N5_004
TAPE: 6
TIME ON TAPE: 0:12:32
POSITION OF SPLASHDOWN: upslope
SETBACK: 3 beam
COMMENTS: Progressive setback occurs. Goes straight and leaves the screen and then comes back. ***IMPACT ON PROGRESSIVE WAVE***

M544N6_001
TAPE: 6
TIME ON TAPE: 0:13:18
POSITION OF SPLASHDOWN: upslope
SETBACK: 3 beam
COMMENTS: Progressive setback occurs. Goes straight and leaves the screen and then comes back. ***BAD IMPACT ON PROGRESSIVE WAVE***

M544N6_002
TAPE: 6
TIME ON TAPE: 0:14:05
POSITION OF SPLASHDOWN: crest
SETBACK: 2 ½ beam
COMMENTS: Progressive setback occurs. Turned 2 lengths past the end of platform, comes back and then goes straight. ***(Possible Impact on progressive wave)***

M544N6_003 (named M544N6_002 on tape)
TAPE: 6
TIME ON TAPE: 0:14:48
POSITION OF SPLASHDOWN: crest
COMMENTS: Davits didn't release when boat landed, wave pushed boat towards platform and the cables jerked it back out. Progressive setback occurs. Turned 2 lengths past the end of platform, comes back and then goes straight. ***BAD IMPACT ON PROGRESSIVE WAVE***

M544N6_004
TAPE: 6
TIME ON TAPE: 0:15:41
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 beam
COMMENTS: The boat makes contact with the crest and lands on the upslope. Progressive setback occurs. Turned 2 length past the end of platform, comes back and then goes straight

O Series

M544O1_001
TAPE: 5
TIME ON TAPE: 0:05:32
COMMENTS: *The davits didn't release*

M544O1_002
TAPE: 5
TIME ON TAPE: 0:09:02
COMMENTS: The boat makes straight headway

M544O1_003
TAPE: 5
TIME ON TAPE: 0:09:39
COMMENTS: The boat makes straight headway

M544O1_004
TAPE: 5
TIME ON TAPE: 0:10:12
COMMENTS: The boat makes straight headway

M544O1_005
TAPE: 5
TIME ON TAPE: 0:13:50
COMMENTS: The boat makes straight headway

M544O1_006
TAPE: 5
TIME ON TAPE: 0:27:05
COMMENTS: The boat makes straight headway

M544O5_10_001
TAPE: 5
TIME ON TAPE: 0:09:39
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: The boat makes contact with the crest and lands on the upslope, and veers to the port side as it moves away

M544O5_10_002
TAPE: 5
TIME ON TAPE: 0:11:45
POSITION OF SPLASHDOWN: crest
SETBACK: ½ boat length
COMMENTS: Progressive setback occurs, the boat veers to the starboard side as it moves away

M544O5_10_003
TAPE: 5
TIME ON TAPE: 0:12:33
POSITION OF SPLASHDOWN: crest
SETBACK: ½ boat length
COMMENTS: Progressive setback occurs, the boat moves away in an S fashion

M544O5_10_004
TAPE: 5
TIME ON TAPE: 0:14:35
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 ½ boat length
COMMENTS: Progressive setback occurs, the boat moves away in an S fashion, but has hardly enough power to do so

M544O5_20_001
TAPE: 5
TIME ON TAPE: 0:16:42
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ boat length
COMMENTS: The boat makes straight headway

M544O5_20_002
TAPE: 5
TIME ON TAPE: 0:17:30
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ boat length
COMMENTS: The boat makes straight headway

M544O5_20_003
TAPE: 5
TIME ON TAPE: 0:18:10
POSITION OF SPLASHDOWN: trough
COMMENTS: The boat makes contact with the crest and lands in the trough, progressive setback occurs, veers to the starboard side as it moves away **(*POSSIBLE IMPACT)***

M544O5_20_004
TAPE: 5
TIME ON TAPE: 0:19:04
POSITION OF SPLASHDOWN: trough
COMMENTS: The boat makes contact with the crest and lands in the trough, progressive setback occurs, veers to the starboard side as it moves away **(*POSSIBLE IMPACT)***

M544O6_20_001
TAPE: 5
TIME ON TAPE: 0:19:50
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ boat length
COMMENTS: Progressive setback occurs, the boat veers to the starboard side as it moves away

M544O6_20_002
TAPE: 5
TIME ON TAPE: 0:20:41
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ boat length
COMMENTS: The boat makes contact with the crest and lands in the trough, and veers to the starboard side as it moves away

M544O6_20_003
TAPE: 5
TIME ON TAPE: 0:21:25
POSITION OF SPLASHDOWN: crest
COMMENTS: Progressive setback occurs, the boat moves away in an S fashion

M544O6L20_004
TAPE: 5
TIME ON TAPE: 0:22:15
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: Progressive setback occurs, the boat turns to starboard, then port and moves away

M544O6L20_005
TAPE: 5
TIME ON TAPE: 0:22:57
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: Progressive setback occurs, the boat moves away with a straight heading

M544O6L10_001
TAPE: 5
TIME ON TAPE: 0:23:39
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: Progressive setback occurs, the boat turns to starboard, then moves away

M544O6L10_002
TAPE: 5
TIME ON TAPE: 0:24:28
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: The boat makes contact with the crest and lands on the upslope, progressive setback occurs and it veers to the starboard as it moves away

M544O6L10_003
TAPE: 5
TIME ON TAPE: 0:25:23
POSITION OF SPLASHDOWN: upslope
SETBACK: ***POSSIBLE IMPACT***
COMMENTS: The boat makes contact with the crest and lands on the upslope, progressive setback occurs and it veers to the starboard as it moves away ***(POSSIBLE IMPACT ON PROGRESSIVE SETBACK)***

M544O6L10_004
TAPE: 5
TIME ON TAPE: 0:26:11
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 boat length
COMMENTS: progressive setback occurs and it veers to the starboard as it moves away

Q Series

M544Q1_001
TAPE: 7
TIME ON TAPE: 0:35:23
COMMENTS: Moves away slightly to starboard

M544Q1_001
TAPE: 7
TIME ON TAPE: 0:45:08
COMMENTS: Moves away with a straight heading

M544Q1_002
TAPE: 7
TIME ON TAPE: 0:36:01
COMMENTS: Moves away with a straight heading

M544Q1_003
TAPE: 7
TIME ON TAPE: 0:36:46
COMMENTS: Moves away with a straight heading

M544Q1_005
TAPE: 8
TIME ON TAPE: 0:07:47
COMMENTS: Moves away with a straight heading

M544Q4_001
TAPE: 8
TIME ON TAPE: 0:08:18
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Contacts crest, but lands on upslope. *Cables didn't release*

M544Q4_002
TAPE: 8
TIME ON TAPE: 0:09:21
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Contacts crest, but lands on upslope. *Cables didn't release*

M544Q4_003
TAPE: 8
TIME ON TAPE: 0:10:17
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Contacts crest, but lands on upslope. *Cables didn't release*

M544Q4_004
TAPE: 8
TIME ON TAPE: 0:10:56
POSITION OF SPLASHDOWN: crest
COMMENTS: Moves away slightly starboard

M544Q4_005
TAPE: 8
TIME ON TAPE: 0:11:29
POSITION OF SPLASHDOWN: crest
COMMENTS: Moves away slightly starboard

M544Q4_006
TAPE: 8
TIME ON TAPE: 0:12:11
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Contacts crest, but lands on the upslope. Progressive setback occurs. Veered towards starboard, then moves away perpendicular

M544Q4_007
TAPE: 8
TIME ON TAPE: 0:13:04
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Close to impact on progressive wave. Veered towards starboard, then moves away perpendicular

M544Q5_001
TAPE: 7
TIME ON TAPE: 0:37:21
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: *Cable didn't release when they should have.* The boat contacts crest but lands on upslope. Progressive setback occurs. The boat leaves moving from side to side.

M544Q5_002
TAPE: 7
TIME ON TAPE: 0:38:24
POSITION OF SPLASHDOWN: crest
SETBACK: ½ length
COMMENTS: *Cable didn't release*

M544Q5_003
TAPE: 7
TIME ON TAPE: 0:39:10
POSITION OF SPLASHDOWN: crest
SETBACK: ½ length
COMMENTS: Moves starboard, then turns and moves away perpendicular

M544Q5_004
TAPE: 7
TIME ON TAPE: 0:39:55
POSITION OF SPLASHDOWN: upslope
SETBACK: ***Possible Impact***
COMMENTS: Contacts the crest but lands on the upslope. Moves starboard, then turns and moves away perpendicular

M544Q5_005
TAPE: 7
TIME ON TAPE: 0:40:44
POSITION OF SPLASHDOWN: crest
COMMENTS: Moves away with a straight heading

M544Q5_006
TAPE: 7
TIME ON TAPE: 0:41:27
POSITION OF SPLASHDOWN: crest
SETBACK: ½ length
COMMENTS: Moves away with a straight

M544Q6_001
TAPE: 7
TIME ON TAPE: 0:42:03
POSITION OF SPLASHDOWN: crest
SETBACK: ½ length
COMMENTS: Moves towards the starboard, turns and moves away perpendicular

M544Q6_002
TAPE: 7
TIME ON TAPE: 0:42:49
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Moves away to the starboard, then port and moves away

M544Q6_003
TAPE: 7
TIME ON TAPE: 0:43:34
POSITION OF SPLASHDOWN: upslope
SETBACK: 1 length
COMMENTS: Moves away to the starboard, then port and moves away

M544Q6_004
TAPE: 7
TIME ON TAPE: 0:44:19
POSITION OF SPLASHDOWN: crest
SETBACK: ½ length
COMMENTS: Moves away slightly to starboard

R Series

M544R1_001
TAPE: 7
TIME ON TAPE: 0:45:38
COMMENTS: Moves away with a straight heading

M544R1_002
TAPE: 7
TIME ON TAPE: 0:46:09
COMMENTS: Moves away with a straight heading

M544R1_003
TAPE: 7
TIME ON TAPE: 0:46:43
COMMENTS: Moves away with a straight heading

M544R1_004
TAPE: 7
TIME ON TAPE: 0:51:23
COMMENTS: Moves away with a straight heading

M544R1_005
TAPE: 7
TIME ON TAPE: 0:52:38
COMMENTS: Moves away with a straight heading

M544R1_006
TAPE: 7
TIME ON TAPE: 0:55:08
COMMENTS: Moves away with a straight heading

M544R1_007
TAPE: 8
TIME ON TAPE: 0:13:48
COMMENTS: Moves away with a straight heading

M544R1_008
TAPE: 8
TIME ON TAPE: 0:17:12
COMMENTS: Moves away with a straight heading

M544R4_001
TAPE: 8
TIME ON TAPE: 0:14:19
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Contacts crest, but lands on upslope. Moves away with a straight heading

M544R4_002
TAPE: 8
TIME ON TAPE: 0:15:11
POSITION OF SPLASHDOWN: crest
COMMENTS: Moves away with a straight heading

M544R4_003
TAPE: 8
TIME ON TAPE: 0:15:52
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away with a straight heading, veered to starboard at the end of the screen

M544R4_004
TAPE: 8
TIME ON TAPE: 0:16:31
POSITION OF SPLASHDOWN: crest
COMMENTS: Moves away with a straight heading

M544R5_001
TAPE: 7
TIME ON TAPE: 0:47:15
POSITION OF SPLASHDOWN: upslope
COMMENTS: Moves away with a straight heading, slightly to the starboard

M544R5_002
TAPE: 7
TIME ON TAPE: 0:47:53
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away with a straight heading, slightly starboard

M544R5_003
TAPE: 7
TIME ON TAPE: 0:48:28
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away with a straight heading, slightly starboard

M544R5_004
TAPE: 7
TIME ON TAPE: 0:49:10
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: Moves away with a straight heading, slightly starboard

M544R6_001
TAPE: 7
TIME ON TAPE: 0:49:46
POSITION OF SPLASHDOWN: trough
COMMENTS: Contacts the crest but drops in the trough. Moves away slightly to the starboard

M544R6_002
TAPE: 7
TIME ON TAPE: 0:50:30
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: *Boom didn't release*

M544R6_003
TAPE: 7
TIME ON TAPE: 0:53:07
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away slightly to port

M544R6_004
TAPE: 7
TIME ON TAPE: 0:53:47
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away with a straight heading, slightly starboard

M544R6_005
TAPE: 7
TIME ON TAPE: 0:54:28
POSITION OF SPLASHDOWN: crest
COMMENTS: Moves away slightly to port

S Series

M544S1_001
TAPE: 7
TIME ON TAPE: 0:55:46
COMMENTS: Moves away with a straight heading

M544S1_002
TAPE: 7
TIME ON TAPE: 0:56:25
COMMENTS: Moves away with a straight heading

M544S5_001
TAPE: 7
TIME ON TAPE: 0:56:56
POSITION OF SPLASHDOWN: still water
COMMENTS: Moves away slightly to starboard

M544S5_002
TAPE: 7
TIME ON TAPE: 1:00:06
POSITION OF SPLASHDOWN: still water
SETBACK: very small amount
COMMENTS: Moves away slightly to starboard

M544S5_003
TAPE: 7
TIME ON TAPE: 1:02:35
POSITION OF SPLASHDOWN: upslope of breaking wave
SETBACK: 1 length
COMMENTS: Moves away slightly to starboard

M544S5_004
TAPE: 7
TIME ON TAPE: 1:05:09
POSITION OF SPLASHDOWN: still water
SETBACK: 1 length
COMMENTS: Breaking wave causes another ½ length setback. Turns starboard, then port, then moves away perpendicular

T Series

M544T1_001
TAPE: 7
TIME ON TAPE: 1:08:07
COMMENTS: Moves away with a straight heading

M544T1_002
TAPE: 7
TIME ON TAPE: 1:08:37
COMMENTS: Moves away with a straight heading

M544T5_001
TAPE: 7
TIME ON TAPE: 1:11:16
POSITION OF SPLASHDOWN: upslope of breaking wave
SETBACK: 1 length
COMMENTS: Moves away slightly to port

M544T5_002
TAPE: 7
TIME ON TAPE: 0:47:53
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away with a straight heading, slightly starboard

M544T5_003
TAPE: 7
TIME ON TAPE: 1:14:16
POSITION OF SPLASHDOWN: still water
SETBACK: ½ length
COMMENTS: Moves away with a fairly straight heading

M544T5_004
TAPE: 7
TIME ON TAPE: 1:16:50
POSITION OF SPLASHDOWN: upslope of breaking wave
SETBACK: 1 length
COMMENTS: *Boom didn't release*

M544T5_005
TAPE: 7
TIME ON TAPE: 1:19:34
POSITION OF SPLASHDOWN: upslope of breaking wave
SETBACK: 1 length
COMMENTS: Moves away with a straight heading, slightly to port

U Series

M544U1_001
TAPE: 7
TIME ON TAPE: 1:22:04
COMMENTS: Moves away slightly to starboard

M544U1_002
TAPE: 7
TIME ON TAPE: 1:22:33
COMMENTS: Moves away slightly to starboard

M544U5_001
TAPE: 7
TIME ON TAPE: 1:23:05
POSITION OF SPLASHDOWN: upslope of breaking wave
SETBACK: 1 length
COMMENTS: Progressive setback occurs. Pushed starboard, then moves away with a straight heading

M544U5_002
TAPE: 7
TIME ON TAPE: 1:25:10
POSITION OF SPLASHDOWN: crest
SETBACK: very small amount
COMMENTS: Moves away slightly to starboard

M544U5_003
TAPE: 7
TIME ON TAPE: 1:27:18
POSITION OF SPLASHDOWN: upslope of breaking wave
SETBACK: 1 ½ length
COMMENTS: Moves away slightly starboard

V Series

M544V1_001
TAPE: 8
TIME ON TAPE: 0:00:00
COMMENTS: Moves away with a straight heading

M544V1_002
TAPE: 8
TIME ON TAPE: 0:00:34
COMMENTS: Moves away with a straight heading

M544V1_003
TAPE: 8
TIME ON TAPE: 0:07:11
COMMENTS: Moves away with a straight heading

M544V5_001
TAPE: 8
TIME ON TAPE: 0:01:10
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away with a straight heading

M544V5_002
TAPE: 8
TIME ON TAPE: 0:03:08
POSITION OF SPLASHDOWN: upslope
SETBACK: ½ length
COMMENTS: Moves away with a straight heading

M544V5_003
TAPE: 8
TIME ON TAPE: 0:05:10
POSITION OF SPLASHDOWN: upslope
SETBACK: very small amount
COMMENTS: Moves away with a straight heading

PJ01874 Evacuation Systems

Date	Time	Drive Signal	File Name	V. Tape #	Vid Time	Comments
02-Jan-02				Hydraulic system down for repairs / maintenance. 1:20 lifeboat being prepared for testing, ready tomorrow		
03-Jan-02		Remove davit system for motor reduction gearbox installation and prod boom set-up				
	15:16:26	n/a	turning_circle_20_001	n/a	n/a	turning circle trial 1:20 lifeboat
	15:27:50	n/a	speed_check_20_001	n/a	n/a	speed trial 1:20 lifeboat
	15:44:09	n/a	turning_circle_20_002	n/a	n/a	turning circle trial 1:20 lifeboat
	16:23:41	n/a	speed_check_27_001	n/a	n/a	speed trial 1:27 lifeboat
	16:34:45	n/a	turning_circle_27_001	n/a	n/a	turning circle trial 1:27 lifeboat
07-Jan-02		start set-up for prod boom				
		set up for wind load tests, rezero wind load cell				
	18:30:28	n/a	wind _load_13_001	n/a	n/a	5 wind load steps, perpendicular launch posn
	19:01:31	n/a	wind _load_13_002	n/a	n/a	5 wind load steps, parallel launch posn
08-Jan-02		Set up, development of boom control software and hardware. Calibrate transducers.				
09-Jan-02		Calibration and primary testing of boom/davit control software and transducers.				
		Communication delay issues with PC's being investigated.				
		Communication delays isolated to Industrial PC on the island.				
10-Jan-02		PC communication issues being addressed.				
		Prepare for lifeboat calibrations				
	14:30:37	n/a	rate_z_check_001	n/a	n/a	
	14:36:37	n/a	rate_all_check_001	n/a	n/a	
	14:41:40	n/a	rate_all_check_002	n/a	n/a	delete flawed cal on ch 40 (z) and repeat
	14:58:51	n/a	rate_all_check_003	n/a	n/a	swap z and y channels and repeat
11-Jan-02		Set up for bollard pull tests, model fully charged, loadcell rezeroed				
	10:01:55	n/a	bollard_check_13_001	n/a	n/a	
	10:19:25	n/a	speed_check_13_001	n/a	n/a	cal speed checks using qualisys
		rudder interference limiting turning ability. Correct and re-cal rudder angle				
		Rudder corrected, recharge model before proceeding to repeat performance checks.				
	13:50:57	n/a	speed_check_13_002	n/a	n/a	cal speed checks using qualisys
	13:56:00	n/a	turning_circle_13_001	n/a	n/a	turning circle performance check
		Boom load vs angle checks completed, partly videoed on tape #1 from 0:00:00 to 0:12:04				
		Note: Video no's start at 4 to avoid confusion with prev proj phase				
	16:21:08	n/a	boom_test_001	4	0:12:04	initial drop test no waves or wind.
			data checks show qualisys to be inaccurate, problem with qualisys set-up found and corrected. Repeat speed and turning circle checks.			
	17:30:30	n/a	speed_check_13_003	n/a	n/a	cal speed checks using qualisys
					davit/boom development continues	
	18:57:11	n/a	boom_test_002	4	0:12:47	drop abandoned due to davit problem
		davit/boom adjustments				
	19:07:22	n/a	boom_test_003	4	0:13:44	
12-Jan-02		Model charged, davit height and davit lines all adjusted for correct model clearance.				
	9:30:00	Hydraulics started, pumps warming.				
				New davit lines fabricated and installed to reflect corrected model location, davit payout and waterline verified.		
		Calibrate lifeboat immersion channel				
	10:53:20	n/a	turning_circle_13_003	4	0:14:20	video incorrectly labeled _002
	10:58:02	n/a	turning_circle_13_004	4	0:17:12	Aborted
		n/a	turning_circle_13_005	4	0:17:34	
		Rezero all waveprobes				
		reverse slope of all aneomometer channels (wind currently showing as negative).				
	12:21:05	n/a	decays_m13_001	n/a	n/a	roll, pitch and yaw decays

			Series A: boom, intact, perp. Launch, heavy disp			
	12:39:09	n/a	M544A1_001	4	0:21:03	Calm launch w/boom, no wind
	12:43:53	n/a	M544A1_002	4	0:21:40	Calm launch w/boom, no wind
	12:47:57	n/a	M544A1_003	4	0:22:17	Calm launch w/boom, no wind
	13:06:22	W2_13_15	M544A2_001	4	0:23:11	Crest launch, wind drive 2.534v (1.997m/s)
	13:18:16	W2_13_15	M544A2_002	4	0:24:37	Crest launch, wind drive 2.534v (1.997m/s) run ababdoned due to davit control problem
	13:25:16	W2_13_15	M544A2_003	4	0:26:49	Crest launch, wind drive 2.534v (1.997m/s) run ababdoned due to davit control problem
			Shut down hydraulics			
14-Jan-02			Start pumps			
			Davit/boom/auto launch system problems discovered Saturday diagnosed / corrected by se and electronics, initial wave test looks promising			
	11:51:34	W2_13_15	M544A2_004	4	0:28:18	Crest launch, wind drive 2.534v (1.997m/s)
						Incorrect dacon file for above runs, repeat
	12:17:51	W2_13_15	M544A2_005	4	0:29:35	Crest launch, wind drive 2.534v (1.997m/s)
			Confusion over uninstalled/installed/calibrated channels requires change to sample configuration and will necessitate repeating all prior runs			
	12:41:08	W2_13_15	M544A2_006	4	0:30:54	Crest launch, wind drive 2.534v (1.997m/s)
	12:57:25	W2_13_15	M544A2_007	4	0:32:02	Crest launch, wind drive 2.534v (1.997m/s)
	13:12:08	W2_13_15	M544A2_008	4	0:33:20	Upslope launch, wind drive 2.534v (1.997m/s)
	13:27:06	W2_13_15	M544A2_009	4	0:34:34	Upslope launch, wind drive 2.534v (1.997m/s)
	13:42:42	W3_13_15	M544A3_001	4	0:35:53	Upslope launch, wind drive 3.463v (2.718m/s)
	13:57:12	W3_13_15	M544A3_002	4	0:36:51	Upslope launch, wind drive 3.463v (2.718m/s)
					Sequencing lost on pilot view dv counter, reference rover view from here.	
	14:12:29	W3_13_15	M544A3_003	4	0:37:49	Crest launch, wind drive 3.463v (2.718m/s)
	14:27:04	W3_13_15	M544A3_004	4	0:38:44	Crest launch, wind drive 3.463v (2.718m/s)
	14:42:45	n/a	M544A1_004	4	0:39:39	Calm launch w/boom, no wind
	14:48:07	n/a	M544A1_005	4	0:40:07	Calm launch w/boom, no wind
	14:54:27	n/a	M544A1_006	4	0:40:46	Calm launch w/boom, no wind
	15:00:07	W4_13_15	M544A4_001	4	0:41:26	Tag line release failed : repeat
	15:16:27	W4_13_15	M544A4_002	4	0:42:25	Upslope launch, wind drive 4.464v (3.495m/s)
	15:30:20	W4_13_15	M544A4_003	4	0:43:22	Upslope launch, wind drive 4.464v (3.495m/s)
	15:45:40	W4_13_15	M544A4_004	4	0:44:01	Tag line release failed : repeat
	16:00:07	W4_13_15	M544A4_005	4	0:44:59	Crest launch, wind drive 4.464v (3.495m/s)
						Boom speed updated from 180 to 340
	16:15:09	W4_13_15	M544A4_006	4	0:45:49	Crest launch, wind drive 4.464v (3.495m/s)
	16:30:06	W5_13_15	M544A5_001	4	0:46:36	Upslope launch, wind drive 5.465v (4.271m/s)
	16:45:19	W5_13_15	M544A5_002	4	0:47:21	Upslope launch, wind drive 5.465v (4.271m/s)
				Attach additional bracket to tag line release on lifeboat to prevent further release failures.		
	17:10:29	W5_13_15	M544A5_003	4	0:48:08	Upslope launch, wind drive 5.465v (4.271m/s)
	17:26:15	W5_13_15	M544A5_004	4	0:48:55	Crest launch, wind drive 5.465v (4.271m/s)
	17:40:11	W5_13_15	M544A5_005	4	0:49:41	Crest launch, wind drive 5.465v (4.271m/s)
	17:55:49	W6_13_15	M544A6_001	4	0:50:26	Upslope launch, wind drive 6.430v (5.020m/s)
	18:10:34	W6_13_15	M544A6_002	4	0:51:15	Crest launch, wind drive 6.430v (5.020m/s)
	18:25:33	W6_13_15	M544A6_003	4	0:52:00	Crest launch, wind drive 6.430v (5.020m/s)
	18:40:22	W6_13_15	M544A6_004	4	0:52:34	Upslope launch, wind drive 6.430v (5.020m/s)
	18:55:40	n/a	M544A1_007	4	0:53:23	Calm launch w/boom, no wind

Series H: no boom, intact, perp. Launch, heavy disp.

	18:59:19	n/a	M544H1_001	4	0:54:05	Calm launch w/o boom, no wind
	19:02:20	n/a	M544H1_002	4	0:54:39	Calm launch w/o boom, no wind
	19:06:00	n/a	M544H1_003	4	0:55:12	Calm launch w/o boom, no wind
	19:12:02	W2_13_15	M544H2_001	4	0:55:45	Crest launch, wind drive 2.534v (1.997m/s)
	19:27:19	W2_13_15	M544H2_002	4	0:56:54	Crest launch, wind drive 2.534v (1.997m/s)
	19:42:57	W2_13_15	M544H2_003	4	0:58:08	Upslope launch, wind drive 2.534v (1.997m/s)
	19:57:09	W2_13_15	M544H2_004	4	0:59:27	Upslope launch, wind drive 2.534v (1.997m/s)
	20:05:00		Shut down hydraulics			
15-Jan-02	8:00:00		Start hydraulics			
	8:03:00		Rezero all waveprobes			
			wind fan bank (#9) has wire rubbing, re-route, ok to run but insulation should be replaced.			
	8:40:45	n/a	M544H1_004	4	1:00:41	Calm launch w/o boom, no wind
	8:43:40	W3_13_15	M544H3_001	4	1:01:14	Upslope launch, wind drive 3.463v (2.718m/s)
	8:58:22	W3_13_15	M544H3_002	4	1:02:17	Upslope launch, wind drive 3.463v (2.718m/s)
	9:13:04	W3_13_15	M544H3_003	4	1:03:16	Crest launch, wind drive 3.463v (2.718m/s)
	9:28:07	W3_13_15	M544H3_004	4	1:04:15	Crest launch, wind drive 3.463v (2.718m/s)
	9:38:16	W4_13_15	M544H4_001	4	1:05:04	Crest launch, wind drive 4.464v (3.495m/s)
	9:55:13	W4_13_15	M544H4_002	4	1:05:41	Upslope launch, wind drive 4.464v (3.495m/s)
	10:10:27	W4_13_15	M544H4_003	4	1:06:37	Crest launch, wind drive 4.464v (3.495m/s)
	10:25:27	W4_13_15	M544H4_004	4	1:07:23	Upslope launch, wind drive 4.464v (3.495m/s)
	10:40:57	W5_13_15	M544H5_001	4	1:08:21	Failed release of davit lines : repeat
	10:55:34	W5_13_15	M544H5_002	4	1:09:08	Crest launch, wind drive 5.465v (4.271m/s)
	11:10:07	W5_13_15	M544H5_003	4	1:09:49	Crest launch, wind drive 5.465v (4.271m/s)
	11:25:49	W5_13_15	M544H5_004	4	1:10:30	Upslope launch, wind drive 5.465v (4.271m/s) IMPACT
	11:40:23	W5_13_15	M544H5_005	4	1:11:12	Upslope launch, wind drive 5.465v (4.271m/s) IMPACT
	11:55:49	W6_13_15	M544H6_001	4	1:11:59	Upslope launch, wind drive 6.430v (5.020m/s)
	12:15:44	W6_13_15	M544H6_002	4	1:12:59	launch failure : repeat
			Davit line broken, replace and continue			
	12:48:33	W6_13_15	M544H6_003	4	1:13:51	Crest launch, wind drive 6.430v (5.020m/s)
	13:03:11	W6_13_15	M544H6_004	4	1:14:30	Crest launch, wind drive 6.430v (5.020m/s)
	13:18:55	W6_13_15	M544H6_005	4	1:15:14	Upslope launch, wind drive 6.430v (5.020m/s)

	13:33:22	n/a	M544H1_005	4	1:16:03	Calm launch w/o boom, no wind
			Modify lifeboat to light displacement			
	15:13:27	n/a	speed_check_13_004	n/a	n/a	check target speed of 6.5 knts
			Boat too slow, adjust and re-check			
	15:54:01	n/a	speed_check_13_005	n/a	n/a	check target speed of 6.5 knts
	16:58:09	n/a	bollard_check_13_002	n/a	n/a	light condition bollard pull
	17:00:16	n/a	bollard_check_13_003	n/a	n/a	light condition bollard pull
	17:04:07	n/a	bollard_check_13_004	n/a	n/a	light condition bollard pull
	17:07:40	n/a	turning_circle_13_006	n/a	n/a	light condition turning circle
	17:44:37	n/a	acceleration_13_001	4	1:16:43	light condition standing start acceleration check
	17:54:30	n/a	acceleration_13_002	4	1:17:13	light condition standing start acceleration check
	17:59:45	n/a	decays_m13_002	n/a	n/a	light condition roll, pitch, heave decays
17-Jan-02			start hydraulics			
			rezero all waveprobes			
			model not charging on davits, remove and check, no fault found. replace on davit, working OK, may be indicator of intermittant problem, monitor			
			Series G: boom, intact, perp. Launch, light disp.			
	9:24:37	n/a	M544G1_001	4	1:17:42	Calm launch w/boom, no wind
	9:27:42	n/a	M544G1_002	4	1:18:12	Calm launch w/boom, no wind
		charging problem back, finish calm runs and attempt diagnosis / repair.				
	9:33:35	n/a	M544G1_003	4	1:18:44	Calm launch w/boom, no wind
			Davit charging problem appears to be intermittant mechanical connection with forward davit release. Continue testing as capable.			
	10:33:00	W2_13_15	M544G2_001	4	1:19:20	Upslope launch, wind drive 2.534v (1.997m/s)
	10:48:54	W2_13_15	M544G2_002	4	1:20:48	Crest launch, wind drive 2.534v (1.997m/s)
	11:03:24	W2_13_15	M544G2_003	4	1:22:01	Upslope launch, wind drive 2.534v (1.997m/s)
	11:18:13	W2_13_15	M544G2_004	4	1:23:17	Crest launch, wind drive 2.534v (1.997m/s)
	11:33:21	W3_13_15	M544G3_001	4	1:24:33	Upslope launch, wind drive 3.463v (2.718m/s)
	11:48:28	W3_13_15	M544G3_002	4	1:25:25	Crest launch, wind drive 3.463v (2.718m/s)
	12:04:05	W3_13_15	M544G3_003	4	1:26:38	Crest launch, wind drive 3.463v (2.718m/s)
	12:20:21	W3_13_15	M544G3_004	4	1:27:15	Upslope launch, wind drive 3.463v (2.718m/s)
	12:35:35	W4_13_15	M544G4_001	5	0:00:00	Crest launch, wind drive 4.464v (3.495m/s)
	12:50:27	W4_13_15	M544G4_002	5	0:00:46	Crest launch, wind drive 4.464v (3.495m/s)
	13:05:16	W4_13_15	M544G4_003	5	0:01:34	Upslope launch, wind drive 4.464v (3.495m/s)
	13:20:03	W4_13_15	M544G4_004	5	0:02:18	Upslope launch, wind drive 4.464v (3.495m/s)
	13:35:03	W5_13_15	M544G5_999	n/a	n/a	auto launch unresponsive, repeat
	13:50:07	W5_13_15	M544G5_001	5	0:03:02	Crest launch, wind drive 5.465v (4.271m/s)
	14:05:41	W5_13_15	M544G5_002	5	0:03:41	Crest launch, wind drive 5.465v (4.271m/s)
	14:20:16	W5_13_15	M544G5_003	5	0:04:33	Upslope launch, wind drive 5.465v (4.271m/s)
	14:35:14	W5_13_15	M544G5_004	5	0:05:21	Upslope launch, wind drive 5.465v (4.271m/s)
	14:50:08	W6_13_15	M544G6_001	5	0:06:07	Crest launch, wind drive 6.430v (5.020m/s)
	15:05:16	W6_13_15	M544G6_002	5	0:06:07	Crest launch, wind drive 6.430v (5.020m/s)
	15:20:17	W6_13_15	M544G6_003	5	0:06:43	Upslope launch, wind drive 6.430v (5.020m/s)
	15:35:03	W6_13_15	M544G6_004	5	0:07:23	Upslope launch, wind drive 6.430v (5.020m/s)

15:50:07	n/a	M544G1_004	5	0:08:04	Calm launch w/boom, no wind

Verify qualisys ranging capability in parallel launch by rotating davits only to parallel pos'n and attempting launch.

16:51:31	n/a	para_check_001	n/a	n/a	calm check run of parallel launch condition to check qualisys range (qualisys fail, re-try)
16:55:49	n/a	para_check_002	n/a	n/a	calm check run of parallel launch condition to check qualisys range
17:00:46	W5_13_15	para_check_003	n/a	n/a	w5 check run of parallel launch condition to check qualisys range
17:14:30	W6_13_15	para_check_004	n/a	n/a	w6 check run of parallel launch condition to check qualisys range

Above tests verify qualisys range insufficient y travel to all paralell launch. Finish remainder of perp. Config program and re-cal qualisys to finish parallel program after.

Reset lifeboat to heavy disp.

18:39:39	n/a	speed_check_13_006	n/a	n/a	check target speed of 6.0 knts

Series O: no boom, intact, perp. Launch, heavy disp.

19:02:22	n/a	M544O1_001	5	0:08:31	Calm launch w/o boom, no wind, davit release failed : repeat
19:06:47	n/a	M544O1_002	5	0:09:01	Calm launch w/o boom, no wind
19:09:50	n/a	M544O1_003	5	0:09:33	Calm launch w/o boom, no wind
19:12:36	n/a	M544O1_004	5	0:10:06	Calm launch w/o boom, no wind
19:14:11	n/a	decays_m13_003	n/a	n/a	heavy condition roll, pitch, heave decays
19:20:20	W5_13_10	M544O5_10_001	5	0:10:41	Upslope launch, wind drive 5.465v (4.271m/s)
19:35:06	W5_13_10	M544O5_10_002	5	0:11:39	Crest launch, wind drive 5.465v (4.271m/s)
19:50:27	W5_13_10	M544O5_10_003	5	0:12:31	Crest launch, wind drive 5.465v (4.271m/s)

Shut down hydraulics

18-Jan-02

Start hydraulics

lifeboat davit charging system still troublesome, attempt to complete current condition and have lifeboat repaired during configuration change

Boom base load cell found to have insufficient range for future tests, reset channel offset to a negative value to allow increased load range.

auto launch waveprobe found to develop large offset when axis motors enabled. Unable to eliminate, greatest influence on smallest waves, work around problem.

rezero all waveprobes

10:15:36	n/a	M544O1_005	5	0:13:47	Calm launch w/o boom, no wind
10:21:33	W5_13_10	M544O5_10_004	5	0:14:28	Upslope launch, wind drive 5.465v (4.271m/s)
10:37:07	W5_13_20	M544O5_20_001	5	0:16:39	Crest launch, wind drive 5.465v (4.271m/s)
10:51:16	W5_13_20	M544O5_20_002	5	0:17:26	Crest launch, wind drive 5.465v (4.271m/s)
11:05:25	W5_13_20	M544O5_20_003	5	0:18:08	Upslope launch, wind drive 5.465v (4.271m/s) impact
11:20:20	W5_13_20	M544O5_20_004	5	0:18:57	Upslope launch, wind drive 5.465v (4.271m/s)
11:35:14	W6_13_20	M544O6_20_001	5	0:19:42	Crest launch, wind drive 6.430v (5.020m/s)
11:50:09	W6_13_20	M544O6_20_002	5	0:20:36	Crest launch, wind drive 6.430v (5.020m/s)
12:06:38	W6_13_20	M544O6_20_003	5	0:21:19	Downslope launch, wind drive 6.430v (5.020m/s)
12:20:31	W6_13_20	M544O6_20_004	5	0:22:01	Upslope launch, wind drive 6.430v (5.020m/s)
12:35:17	W6_13_20	M544O6_20_005	5	0:22:49	Upslope launch, wind drive 6.430v (5.020m/s)

w6 10 steep wave will be run at 0.9 span to prevent excess water shipping to floor behind wavemaker

12:50:22	W6_13_10	M544O6_10_001	5	0:23:31	Upslope launch, wind drive 6.430v (5.020m/s)
13:05:13	W6_13_10	M544O6_10_002	5	0:24:22	Upslope launch, wind drive 6.430v (5.020m/s)
13:20:33	W6_13_10	M544O6_10_003	5	0:25:17	Upslope launch, wind drive 6.430v (5.020m/s)
13:35:33	W6_13_10	M544O6_10_004	5	0:26:07	Crest launch, wind drive 6.430v (5.020m/s)
13:50:22	n/a	M544O1_006	5	0:27:00	Calm launch w/o boom, no wind

			Lifeboat to machine shop for davit release repairs			
			Attempt to convert to damaged / low condition. Jacking mechanism failed during set-up, will require re-design. Attempt to re-cal qualisys to allow for parallel and perpindicular launch and thereby make use of unavoidable repair time. See below for camera calibration recordings prior to camera relocations.			
			Shut down hydraulics			
			Video of camera cal grid, ovhd, attempt 1	5	0:27:34	
			Video of camera cal grid, ovhd, attempt 2	5	0:27:49	
			Video of camera cal grid, beam, attempt 1	5	0:28:09	
			Video of peak tree for cal purposes.	5	0:28:28	
19-Jan-02			Qualisys system re-configured / re-cal'd to accommodate both para and perp launch positions. Boom re-configured to perp launch pos'n, jacking mech removed from davit system, to be replaced by retrofit later in program. Davits set up in para launch pos'n with boom disabled.			
			Start hydraulics Rezero boom base load cell Prepare model and davits for para launch. Rezero all waveprobes			
			Series I: no boom, intact, para. Launch, heavy disp.			
	13:28:04	n/a	M544I1_001	5	0:28:50	Attempted calm run, davit release failed, clean immersion contacts and repeat
	13:33:58	n/a	M544I1_002	5	0:29:34	Calm launch w/o boom, no wind Rudder problem, repeat
			Model not tracking straight, suspect rudder damage from earlier fall. Correct and continue, repeating previous run.			
	15:26:08	n/a	M544I1_003	5	0:30:08	Calm launch w/o boom, no wind
	15:28:50	n/a	M544I1_004	5	0:30:43	Calm launch w/o boom, no wind
	15:31:47	n/a	M544I1_005	5	0:31:20	Calm launch w/o boom, no wind
	15:38:07	W2_13_15	M544I2_001	5	0:32:00	Crest launch, wind drive 2.534v (1.997m/s) Network error on davits, reset and continue
	15:47:49	W2_13_15	M544I2_002	5	0:33:07	Crest launch, wind drive 2.534v (1.997m/s)
	15:53:16	n/a	turning_circle_13_007	n/a	n/a	light condition turning circle
	16:02:29	W2_13_15	M544I2_003	5	0:34:22	Upslope launch, wind drive 2.534v (1.997m/s)
	16:17:09	W2_13_15	M544I2_004	5	0:35:37	Crest launch, wind drive 2.534v (1.997m/s)
	16:32:29	W2_13_15	M544I2_005	5	0:36:50	Upslope launch, wind drive 2.534v (1.997m/s)
	16:47:03	W3_13_15	M544I3_001	5	0:38:02	Crest launch, wind drive 3.463v (2.718m/s)
	17:02:13	W3_13_15	M544I3_002	5	0:38:59	Crest launch, wind drive 3.463v (2.718m/s)
	17:17:04	W3_13_15	M544I3_003	5	0:39:52	Upslope launch, wind drive 3.463v (2.718m/s)
	17:32:28	W3_13_15	M544I3_004	5	0:40:55	Upslope launch, wind drive 3.463v (2.718m/s)
	17:47:05	W4_13_15	M544I4_001	5	0:41:46	Crest launch, wind drive 4.464v (3.495m/s)
	18:02:03	W4_13_15	M544I4_002	5	0:42:38	Upslope launch, wind drive 4.464v (3.495m/s)
	18:17:08	W4_13_15	M544I4_003	5	0:43:27	Upslope launch, wind drive 4.464v (3.495m/s)
	18:32:07	W4_13_15	M544I4_004	5	0:43:17	Upslope launch, wind drive 4.464v (3.495m/s)
	18:47:01	W5_13_15	M544I5_001	5	0:45:07	Crest launch, wind drive 5.465v (4.271m/s)
	19:02:47	W5_13_15	M544I5_002	5	0:45:57	Upslope launch, wind drive 5.465v (4.271m/s) IMPACT
	19:17:02	W5_13_15	M544I5_003	5	0:46:48	Upslope launch, wind drive 5.465v (4.271m/s) IMPACT
	19:32:15	W5_13_15	M544I5_004	5	0:47:28	Crest launch, wind drive 5.465v (4.271m/s)
			Shut down hydraulics			
	19:45:37	n/a	M544I1_006	5	0:48:18	Calm launch w/o boom, no wind
		n/a	M544I1_007			

21-Jan-02			Start hydraulics			
			Rezero all waveprobes			
			Lifeboat charging			
	9:12:01	n/a	M544I1_007	5	0:48:57	Calm launch w/o boom, no wind
	9:17:53	W6_13_15	M544I6_001	5	0:49:31	Upslope launch, wind drive 6.430v (5.020m/s) BAD IMPACT (x 2)
	9:32:24	W6_13_15	M544I6_002	5	0:50:36	Crest launch, wind drive 6.430v (5.020m/s) BAD IMPACT
	9:47:03	W6_13_15	M544I6_003	5	0:51:34	Crest launch, wind drive 6.430v (5.020m/s) BAD IMPACT
			Further launches at this config / weather abandoned as too dangerous for boat			
			Qualisys marker damaged, repair and continue			
	10:10:31	n/a	M544I1_008	5	0:52:35	Calm launch w/o boom, no wind
			Series B: boom, intact, para. Launch, heavy disp.			
	10:14:28	n/a	M544B1_001	5	0:53:43	Calm launch w/ boom, no wind
			Boom "shaking" during launch, suspect control adjustments may be req'd, contact SE group to further investigate			
	11:08:51	n/a	M544B1_002	5	0:54:24	Calm launch w/ boom, no wind
						Further boom adjustments and re-try
	11:21:28	n/a	M544B1_003	5	0:55:06	Calm launch w/ boom, no wind
	11:25:40	n/a	M544B1_004	5	0:55:35	Calm launch w/ boom, no wind
	11:29:00	n/a	M544B1_005	5	0:56:18	Calm launch w/ boom, no wind
	11:40:05	W2_13_15	M544B2_001	5	0:56:54	Crest launch, wind drive 2.534v (1.997m/s)
						Davit release failed on prev run, correct and repeat
	11:50:18	W2_13_15	M544B2_002	5	0:58:06	Crest launch, wind drive 2.534v (1.997m/s)
	12:05:13	W2_13_15	M544B2_003	5	0:59:19	Upslope launch, wind drive 2.534v (1.997m/s)
	12:20:16	W2_13_15	M544B2_004	5	1:00:32	Crest launch, wind drive 2.534v (1.997m/s)
	12:35:05	W2_13_15	M544B2_005	5	1:01:38	Upslope launch, wind drive 2.534v (1.997m/s)
	12:50:06	W3_13_15	M544B3_001	5	1:02:52	Upslope launch, wind drive 3.463v (2.718m/s)
	13:05:02	W3_13_15	M544B3_002	5	1:03:30	Crest launch, wind drive 3.463v (2.718m/s)
	13:20:21	W3_13_15	M544B3_003	5	1:04:27	Crest launch, wind drive 3.463v (2.718m/s)
	13:35:05	W3_13_15	M544B3_004	5	1:05:17	Upslope launch, wind drive 3.463v (2.718m/s)
	13:50:21	W4_13_15	M544B4_001	5	1:06:15	Crest launch, wind drive 4.464v (3.495m/s)
	14:05:07	W4_13_15	M544B4_002	5	1:07:03	Crest launch, wind drive 4.464v (3.495m/s)
			Davit line broken while raising, lifeboat fell to water, ballast weight loosened, replace davit lines, inspect lifeboat, correct ballast and continue			
	15:02:27	W4_13_15	M544B4_003	5	1:07:46	Crest launch, wind drive 4.464v (3.495m/s)
	15:17:06	W4_13_15	M544B4_004	5	1:08:37	Upslope launch, wind drive 4.464v (3.495m/s)
	15:32:08	W4_13_15	M544B4_005	5	1:09:17	Upslope launch, wind drive 4.464v (3.495m/s)
	15:47:15	W5_13_15	M544B5_001	5	1:10:02	Crest launch, wind drive 5.465v (4.271m/s)
	16:02:08	W5_13_15	M544B5_002	5	1:10:45	Upslope launch, wind drive 5.465v (4.271m/s) Qualisys data bad :repeat
	16:17:28	W5_13_15	M544B5_003	5	1:11:31	Crest launch, wind drive 5.465v (4.271m/s)
	16:32:08	W5_13_15	M544B5_004	5	1:12:14	Upslope launch, wind drive 5.465v (4.271m/s)
	16:47:15	W5_13_15	M544B5_005	5	1:12:59	Upslope launch, wind drive 5.465v (4.271m/s)
	17:02:07	W6_13_15	M544B6_001	5	1:13:46	Crest launch, wind drive 6.430v (5.020m/s)
	17:17:04	W6_13_15	M544B6_002	5	1:14:29	Upslope launch, wind drive 6.430v (5.020m/s)
	17:32:08	W6_13_15	M544B6_003	5	1:15:11	Upslope launch, wind drive 6.430v (5.020m/s)
	17:47:19	W6_13_15	M544B6_004	5	1:15:58	Crest launch, wind drive 6.430v (5.020m/s)
	18:02:32	n/a	M544B1_006	5	1:16:42	Calm launch w/o boom, no wind
			Reset lifeboat to light disp.			
	18:45:17	n/a	speed_check_13_007	n/a	n/a	check target speed of 6.5 knts
	18:58:14	n/a	decays_m13_004	n/a	n/a	light condition roll, pitch, heave decays

Series N: no boom, intact, para. Launch, light disp.

	19:04:30	n/a	M544N1_001	5	1:17:14	Calm launch w/ boom, no wind
	19:12:13	n/a	M544N1_002	5	1:17:41	Calm launch w/o boom, no wind
	19:14:28	n/a	M544N1_003	5	1:18:07	Calm launch w/o boom, no wind
	19:23:20	W2_13_15	M544N2_001	5	1:18:44	Crest launch, wind drive 2.534v (1.997m/s) autolaunch unresponsive, Repeat run
	19:28:10	W2_13_15	M544N2_002	5	1:19:58	Crest launch, wind drive 2.534v (1.997m/s) Autolaunch still unresponsive, seek se assistance
			Shut down hydraulics			
	19:47:18	n/a	M544N1_004	5	1:21:02	Calm launch w/o boom, no wind Data transmission bad
23-Jan-02			Start hydraulics			
			Rezero all waveprobes			
			Autolaunch failures appear to be relevant to low level waves, continue with manual launch to weather 3, if problem persists in higher waves troubleshooting will be required.			
	14:13:05	n/a	M544N1_005	5	1:21:37	Calm launch w/o boom, no wind
	14:20:40	W2_13_15	M544N2_003	5	1:22:11	crest launch, wind drive 2.534v (1.997m/s)
			No video on ovhd or beam cameras, video recorders for these channels reached tape end 10 mins prematurely, suspect vtr's did not respond to earlier stop signal, continued recording.			
	14:35:48	W2_13_15	M544N2_004	6	0:00:00	Crest launch, wind drive 2.534v (1.997m/s)
	14:50:45	W2_13_15	M544N2_005	6	0:01:17	Crest launch, wind drive 2.534v (1.997m/s)
	15:05:07	W2_13_15	M544N2_006	6	0:02:23	Crest launch, wind drive 2.534v (1.997m/s)
	15:20:27	W3_13_15	M544N3_001	6	0:03:22	Crest launch, wind drive 3.463v (2.718m/s)
	15:35:08	W3_13_15	M544N3_002	6	0:04:12	Crest launch, wind drive 3.463v (2.718m/s)
	15:50:19	W3_13_15	M544N3_003	6	0:05:02	Upslope launch, wind drive 3.463v (2.718m/s)
	16:05:23	W3_13_15	M544N3_004	6	0:05:57	Upslope launch, wind drive 3.463v (2.718m/s)
	16:20:12	W4_13_15	M544N4_001	6	0:06:53	Crest launch, wind drive 4.464v (3.495m/s)
	16:35:12	W4_13_15	M544N4_002	6	0:07:41	Upslope launch, wind drive 4.464v (3.495m/s)
	16:50:11	W4_13_15	M544N4_003	6	0:08:34	Upslope launch with Impact, wind drive 4.464v (3.495m/s)
	17:05:10	W4_13_15	M544N4_004	6	0:09:26	Crest launch, wind drive 4.464v (3.495m/s)
	17:20:09	W5_13_15	M544N5_001	6	0:10:08	Crest launch, wind drive 5.465v (4.271m/s)
	17:35:19	W5_13_15	M544N5_002	6	0:10:51	Crest launch, wind drive 5.465v (4.271m/s)
	17:50:06	W5_13_15	M544N5_003	6	0:11:36	Upslope launch, wind drive 5.465v (4.271m/s) IMPACT
	18:05:13	W5_13_15	M544N5_004	6	0:12:28	Upslope launch, wind drive 5.465v (4.271m/s)
	18:20:30	W6_13_15	M544N6_001	6	0:13:13	Crest launch, wind drive 6.430v (5.020m/s) IMPACTS
	18:35:07	W6_13_15	M544N6_002	6	0:13:59	Crest launch, wind drive 6.430v (5.020m/s)
	18:50:04	W6_13_15	M544N6_003	6	0:14:20	Upslope launch, wind drive 6.430v (5.020m/s) IMPACT
	19:05:05	W6_13_15	M544N6_004	6	0:15:37	Upslope launch, wind drive 6.430v (5.020m/s)
			Shut down hydraulics			
	19:20:10	n/a	M544N1_006	6	0:16:27	Calm launch w/o boom, no wind
			Convert set-up to damaged condition			
24-Jan-02			Start hydraulics			
			Rezero all waveprobes			
	11:03:50	n/a	speed_check_13_008	n/a	n/a	check target speed of 6.0 knts
	11:21:31	n/a	decays_m13_005	n/a	n/a	heavy condition roll, pitch, heave decays

Series M: no boom, damaged low, para. Launch, heavy disp.					
11:28:36	n/a	M544M1_001	6	0:17:03	Calm launch w/o boom, no wind
11:32:31	n/a	M544M1_002	6	0:17:49	Calm launch w/o boom, no wind
Both prev calm runs have no davit payout data. Davit system cannot hold home point, found deiron motor couplings loose, tighten, re-home, seems OK, repeat calm runs.					
12:02:31	n/a	M544M1_003	6	0:18:26	Calm launch w/o boom, no wind
12:07:21	W4_13_15	M544M4_001	6	0:19:10	Crest launch, wind drive 4.464v (3.495m/s) No Qualisys Data during launch
12:22:24	W4_13_15	M544M4_002	6	0:20:21	Crest launch, wind drive 4.464v (3.495m/s) No Qualisys Data during launch
Qualisys unable to track model while on davit lines, install extra markers on fwd portion of boat, restores track. Repeat all parts this series					
13:57:47	n/a	M544M1_004	6	0:21:11	Calm launch w/o boom, no wind
14:02:22	n/a	M544M1_005	6	0:21:50	Calm launch w/o boom, no wind
14:05:00	n/a	M544M1_006	6	0:22:30	Calm launch w/o boom, no wind
14:09:13	W4_13_15	M544M4_003	6	0:23:10	Crest launch, wind drive 4.464v (3.495m/s)
14:24:04	W4_13_15	M544M4_004	6	0:24:03	Upslope launch, wind drive 4.464v (3.495m/s) IMPACT
Qualisys track still unacceptable, raise boom out of range, improvement, repeat above wave runs					
14:45:30	W4_13_15	M544M4_005	6	0:24:54	Upslope launch, wind drive 4.464v (3.495m/s) IMPACT
15:00:02	W5_13_15	M544M5_001	6	0:25:45	upslope launch, wind drive 5.465v (4.271m/s)
15:15:27	W6_13_15	M544M6_001	6	0:26:35	Crest launch, wind drive 6.430v (5.020m/s)
15:30:28	W4_13_15	M544M4_006	6	0:27:30	Upslope launch, wind drive 4.464v (3.495m/s)
15:45:09	W4_13_15	M544M4_007	6	0:28:19	Crest launch, wind drive 4.464v (3.495m/s)
16:00:14	W5_13_15	M544M5_002	6	0:29:11	Crest launch, wind drive 5.465v (4.271m/s)
16:15:12	W5_13_15	M544M5_003	6	0:29:57	Crest launch, wind drive 5.465v (4.271m/s)
16:30:09	W5_13_15	M544M5_004	6	0:30:40	Upslope launch, wind drive 5.465v (4.271m/s)
Rubber band atop wave probe 1 broken, replace and rezero. Aneomometer #1 (bot) appears dead (has delevered no data since 21st of jan???, replace with #5 and continue					
16:55:39	W6_13_15	M544M6_002	6	0:31:30	Upslope launch, wind drive 6.430v (5.020m/s) IMPACT (x 3)
17:10:23	W6_13_15	M544M6_003	6	0:32:29	Upslope launch, wind drive 6.430v (5.020m/s) IMPACT (x 3)
17:25:15	W6_13_15	M544M6_004	6	0:33:31	Crest launch, wind drive 6.430v (5.020m/s) IMPACT
17:40:07	n/a	M544M1_007	6	0:34:08	Calm launch w/o boom, no wind
Series F: boom, damaged low, para. Launch, heavy disp.					
17:47:06	n/a	M544F1_001	6	0:34:47	Calm launch w boom, no wind
17:49:56	n/a	M544F1_002	6	0:35:17	Calm launch w boom, no wind
immersion switch data dropout, remove model and clean contacts, OK, continue					
18:07:07	n/a	M544F1_003	6	0:35:48	Calm launch w boom, no wind
18:12:12	W4_13_15	M544F4_001	6	0:36:19	Crest launch, wind drive 4.464v (3.495m/s)
18:27:49	W4_13_15	M544F4_002	6	0:37:03	Crest launch, wind drive 4.464v (3.495m/s)
18:42:36	W4_13_15	M544F4_003	6	0:37:45	Upslope launch, wind drive 4.464v (3.495m/s)
18:57:49	W4_13_15	M544F4_004	6	0:38:33	Upslope launch, wind drive 4.464v (3.495m/s)
19:12:08	W5_13_15	M544F5_001	6	0:39:23	Crest launch, wind drive 5.465v (4.271m/s)
19:27:12	W5_13_15	M544F5_002	6	0:40:10	Crest launch, wind drive 5.465v (4.271m/s)
Shut down hydraulics					
19:42:12	n/a	M544F1_004	6	0:40:50	Calm launch w boom, no wind

25-Jan-02

Start hydraulics
Rezero all waveprobes

Lifeboat data transmission has been getting progressively worse. Ed will re-tune system during first few runs of today

10:10:39	n/a	M544F1_005	6	0:41:22	Calm launch w boom, no wind
10:15:21	W5_13_15	M544F5_003	6	0:41:59	Upslope launch, wind drive 5.465v (4.271m/s)
10:30:33	W5_13_15	M544F5_004	6	0:42:46	Upslope launch, wind drive 5.465v (4.271m/s)
10:45:20	W6_13_15	M544F6_001	6	0:43:30	Upslope launch, wind drive 6.430v (5.020m/s)
11:00:20	W6_13_15	M544F6_002	6	0:44:19	Crest launch, wind drive 6.430v (5.020m/s)
11:15:02	W6_13_15	M544F6_003	6	0:45:05	Upslope launch, wind drive 6.430v (5.020m/s)
11:30:25	W6_13_15	M544F6_004	6	0:45:50	Crest launch, wind drive 6.430v (5.020m/s)

Rotate to perp launch, re-position boom, replace davit lines.

Note: Due to perp launch posn, port side of boat strikes platform during launch. Damaged / removed port rear qualisys marker

Series K: no boom, damaged low, Perp. Launch, heavy disp.

13:49:17	n/a	M544K1_001	6	0:46:39	Calm launch w/o boom, no wind
13:53:17	n/a	M544K1_002	6	0:47:10	Calm launch w/o boom, no wind
14:06:04	n/a	M544K1_003	6	0:47:48	Calm launch w/o boom, no wind
14:10:23	W4_13_15	M544K4_001	6	0:48:19	Crest launch, wind drive 4.464v (3.495m/s)
14:25:03	W4_13_15	M544K4_002	6	0:49:12	Crest launch, wind drive 4.464v (3.495m/s)
15:00:30	W4_13_15	M544K4_003	6	0:49:54	Crest launch, wind drive 4.464v (3.495m/s)
15:15:13	W4_13_15	M544K4_004	6	0:50:39	Upslope launch, wind drive 4.464v (3.495m/s)
15:33:30	W4_13_15	M544K4_005	6	0:50:39	Upslope launch, wind drive 4.464v (3.495m/s)
15:48:11	W5_13_15	M544K5_001	6	0:52:31	Crest launch, wind drive 5.465v (4.271m/s)
16:03:10	W5_13_15	M544K5_002	6	0:53:10	Upslope launch, wind drive 5.465v (4.271m/s)
16:18:19	W5_13_15	M544K5_003	6	0:53:54	Upslope launch, wind drive 5.465v (4.271m/s)
16:33:15	W5_13_15	M544K5_004	6	0:54:36	Crest launch, wind drive 5.465v (4.271m/s)
16:48:07	W6_13_15	M544K6_001	6	0:55:16	Crest launch, wind drive 6.430v (5.020m/s) partial release, final release upslope
17:03:02	W6_13_15	M544K6_002	6	0:56:02	Crest launch, wind drive 6.430v (5.020m/s) partial release, final release trough
17:18:13	W6_13_15	M544K6_003	6	0:56:49	Crest launch, wind drive 6.430v (5.020m/s)
17:33:58	W6_13_15	M544K6_004	6	0:57:34	Upslope launch, wind drive 6.430v (5.020m/s)
17:48:09	n/a	M544K1_004	6	0:58:19	Calm launch w/o boom, no wind

Series D: boom, damaged low, Perp. Launch, heavy disp.

17:52:19	n/a	M544D1_001	6	0:58:51	Calm launch w boom, no wind
17:56:33	n/a	M544D1_002	6	0:59:22	Calm launch w boom, no wind
17:59:49	n/a	M544D1_003	6	0:59:55	Calm launch w boom, no wind
18:03:16	W4_13_15	M544D4_001	6	1:00:28	Upslope launch, wind drive 4.464v (3.495m/s)
18:18:29	W4_13_15	M544D4_002	6	1:01:12	Crest launch, wind drive 4.464v (3.495m/s)
18:33:10	W4_13_15	M544D4_003	6	1:01:52	Upslope launch, wind drive 4.464v (3.495m/s)
18:48:06	W4_13_15	M544D4_004	6	1:02:25	Crest launch, wind drive 4.464v (3.495m/s)
19:03:03	W5_13_15	M544D5_001	6	1:03:05	Crest launch, wind drive 5.465v (4.271m/s)
19:18:04	W5_13_15	M544D5_002	6	1:03:46	Crest launch, wind drive 5.465v (4.271m/s)
19:33:18	W5_13_15	M544D5_003	6	1:04:29	Upslope launch, wind drive 5.465v (4.271m/s)
19:48:22	W5_13_15	M544D5_004	6	1:05:05	Upslope launch, wind drive 5.465v (4.271m/s)

	20:03:07	W6_13_15	M544D6_001	6	1:05:43	Crest launch, wind drive 6.430v (5.020m/s)
	20:18:03	W6_13_15	M544D6_002	6	1:06:29	Crest launch, wind drive 6.430v (5.020m/s)
	20:33:14	W6_13_15	M544D6_003	6	1:07:10	Upslope launch, wind drive 6.430v (5.020m/s) Boom tag line failed to release: Repeat
	20:48:11	W6_13_15	M544D6_004	6	1:07:50	Upslope launch, wind drive 6.430v (5.020m/s)
	21:03:02	W6_13_15	M544D6_005	6	1:08:55	Upslope launch, wind drive 6.430v (5.020m/s)
			Shut down hydraulics			
	21:19:02	n/a	M544D1_004	6	1:09:35	Calm launch w boom, no wind
			Remove davits and frame. Remove damage condition frame and hyd table top to machine shop for modification to permit 2nd damaged condition set-up.			
27-Jan-02						Reinstall damaged condition frame, support frame, davits
28-Jan-02			Start hydraulics set davit height, reinstall aneomometers, yo-yo pot. rezero all waveprobes			
			Series J: no boom, damaged High, Perp. Launch, heavy disp.			
	9:54:48	n/a	M544J1_001	6	1:10:21	Calm launch w/o boom, no wind
	9:59:13	n/a	M544J1_002	6	1:10:53	Calm launch w/o boom, no wind
	10:01:52	n/a	M544J1_003	6	1:11:25	Calm launch w/o boom, no wind
	10:15:32	W4_13_15	M544J4_001	6	1:12:04	Crest launch, wind drive 4.464v (3.495m/s)
	10:30:20	W4_13_15	M544J4_002	6	1:12:49	Upslope launch, wind drive 4.464v (3.495m/s)
	10:45:16	W4_13_15	M544J4_003	6	1:13:39	Upslope launch, wind drive 4.464v (3.495m/s)
				Davit lines fraying due to contact with arm from launch angle. Replace and continue		
	11:09:18	W4_13_15	M544J4_004	6	1:14:53	Crest launch, wind drive 4.464v (3.495m/s)
	11:25:14	W5_13_15	M544J5_001	6	1:15:19	Crest launch, wind drive 5.465v (4.271m/s)
	11:40:06	W5_13_15	M544J5_002	6	1:16:04	Crest launch, wind drive 5.465v (4.271m/s)
	11:55:12	W5_13_15	M544J5_003	6	1:16:48	Crest launch, wind drive 5.465v (4.271m/s)
	12:10:10	W5_13_15	M544J5_004	6	1:17:27	Crest launch, wind drive 5.465v (4.271m/s)
	12:25:06	W5_13_15	M544J5_005	6	1:18:26	Upslope launch, wind drive 5.465v (4.271m/s)
	12:40:20	W6_13_15	M544J6_001	6	1:19:08	Upslope launch, wind drive 6.430v (5.020m/s)
	12:55:04	W6_13_15	M544J6_002	6	1:19:55	Upslope launch, wind drive 6.430v (5.020m/s) IMPACT
	13:10:03	W6_13_15	M544J6_003	6	1:20:43	Upslope launch, wind drive 6.430v (5.020m/s)
	13:25:04	W6_13_15	M544J6_004	6	1:21:22	Crest launch, wind drive 6.430v (5.020m/s)
			Series C: boom, damaged High, Perp. Launch, heavy disp.			
	13:40:09	n/a	M544C1_001	6	1:22:06	Calm launch w boom, no wind
	13:44:03	n/a	M544C1_002	6	1:22:42	Calm launch w boom, no wind
	13:46:56	n/a	M544C1_003	6	1:23:15	Calm launch w boom, no wind
	13:50:51	W4_13_15	M544C4_001	6	1:23:44	Upslope launch, wind drive 4.464v (3.495m/s) Annotation incorrect (unchanged fr prev run)
	14:05:21	W4_13_15	M544C4_002	6	1:24:29	Crest launch, wind drive 4.464v (3.495m/s)
	14:20:13	W4_13_15	M544C4_003	6	1:25:14	Crest launch, wind drive 4.464v (3.495m/s)
	14:35:23	W4_13_15	M544C4_004	6	1:25:51	Crest launch, wind drive 4.464v (3.495m/s)
	14:50:06	W4_13_15	M544C4_005	6	1:26:33	Crest launch, wind drive 4.464v (3.495m/s)
	15:05:43	W5_13_15	M544C5_001	7	0:00:00	Crest launch, wind drive 5.465v (4.271m/s) boom tag line sticking
	15:20:04	W5_13_15	M544C5_002	7	0:00:56	Upslope launch, wind drive 5.465v (4.271m/s)
	15:35:21	W5_13_15	M544C5_003	7	0:01:33	Upslope launch, wind drive 5.465v (4.271m/s)
	15:50:15	W5_13_15	M544C5_004	7	0:02:10	Crest launch, wind drive 5.465v (4.271m/s)
	16:05:13	W5_13_15	M544C5_005	7	0:03:01	Crest launch, wind drive 5.465v (4.271m/s)
			Replace davit lines			

	16:22:38	W6_13_15	M544C6_001	7	0:03:51	Crest launch, wind drive 6.430v (5.020m/s)
	16:37:32	W6_13_15	M544C6_002	7	0:04:29	Crest launch, wind drive 6.430v (5.020m/s)
	16:52:49	W6_13_15	M544C6_003	7	0:05:10	Upslope launch, wind drive 6.430v (5.020m/s) tag line sticking
	17:07:11	W6_13_15	M544C6_004	7	0:06:08	Upslope launch, wind drive 6.430v (5.020m/s)
	17:22:13	W6_13_15	M544C6_005	7	0:06:48	Upslope launch, wind drive 6.430v (5.020m/s) tag line sticking
	17:41:05	W6_13_15	M544C6_006	7	0:07:29	Upslope launch, wind drive 6.430v (5.020m/s) tag line sticking
	17:56:33	n/a	M544C1_004	7	0:08:06	Calm launch w boom, no wind
			Reconfigure davits and boom for parallel launch			
			Series L: no boom, damaged High, Para. Launch, heavy disp.			
	19:12:35	W4_13_15	M544L4_001	7	0:08:34	Crest launch, wind drive 4.464v (3.495m/s)
	19:27:03	n/a	M544L1_001	7	0:09:22	Calm launch w/o boom, no wind
	19:30:42	W4_13_15	M544L4_002	7	0:09:57	Upslope launch, wind drive 4.464v (3.495m/s) IMPACT
	19:45:03	W4_13_15	M544L4_003	7	0:10:47	Crest launch, wind drive 4.464v (3.495m/s)
			Shut down hydraulics			
29-Jan-02			Start up hydraulics			
	8:44:04	n/a	M544L1_002	7	0:11:32	Calm launch w/o boom, no wind
	8:47:38	n/a	M544L1_003	7	0:12:12	Calm launch w/o boom, no wind
	8:50:39	W4_13_15	M544L4_004	7	0:12:50	Upslope launch, wind drive 4.464v (3.495m/s) IMPACT
	9:05:02	W5_13_15	M544L5_001	7	0:13:40	Crest launch, wind drive 5.465v (4.271m/s) IMPACT
	9:20:05	W5_13_15	M544L5_002	7	0:14:31	Upslope launch, wind drive 5.465v (4.271m/s) IMPACT (x 2)
	9:35:18	W5_13_15	M544L5_003	7	0:15:25	Upslope launch, wind drive 5.465v (4.271m/s) IMPACT (x2)
	9:50:12	W5_13_15	M544L5_004	7	0:16:23	Crest launch, wind drive 5.465v (4.271m/s) IMPACT
	10:05:25	W6_13_15	M544L6_001	7	0:17:10	Crest launch, wind drive 6.430v (5.020m/s) IMPACT
	10:20:16	W6_13_15	M544L6_002	7	0:18:03	Upslope launch, wind drive 6.430v (5.020m/s) IMPACT
	10:35:20	W6_13_15	M544L6_003	7	0:18:53	Upslope launch, wind drive 6.430v (5.020m/s) IMPACT
	10:50:20	W6_13_15	M544L6_004	7	0:19:42	Crest launch, wind drive 6.430v (5.020m/s)
	11:05:54	n/a	M544L1_004	7	0:20:40	Calm launch w/o boom, no wind
			Series E: boom, damaged High, Para. Launch, heavy disp.			
	11:13:58	n/a	M544E1_001	7	0:21:11	Calm launch w boom, no wind
			Replace davit lines			
	11:42:52	n/a	M544E1_002	7	0:21:42	Calm launch w boom, no wind
	11:45:34	n/a	M544E1_003	7	0:22:13	Calm launch w boom, no wind
	11:49:05	W4_13_15	M544E4_001	7	0:22:44	Crest launch, wind drive 4.464v (3.495m/s)
	12:04:04	W4_13_15	M544E4_002	7	0:23:27	Crest launch, wind drive 4.464v (3.495m/s)
	12:19:10	W4_13_15	M544E4_003	7	0:24:15	Upslope launch, wind drive 4.464v (3.495m/s) Tag line sticking
						Loop at tagline end broken, replace and continue
	12:46:10	W4_13_15	M544E4_004	7	0:25:03	Upslope launch, wind drive 4.464v (3.495m/s)
	13:00:11	W5_13_15	M544E5_001	7	0:25:48	Crest launch, wind drive 5.465v (4.271m/s)
	13:15:28	W5_13_15	M544E5_002	7	0:26:27	Crest launch, wind drive 5.465v (4.271m/s)
	13:30:34	W5_13_15	M544E5_003	7	0:27:11	Upslope launch, wind drive 5.465v (4.271m/s)
	13:45:01	W5_13_15	M544E5_004	7	0:27:51	Crest launch, wind drive 5.465v (4.271m/s)
	14:00:11	W5_13_15	M544E5_005	7	0:28:30	Upslope launch, wind drive 5.465v (4.271m/s)
	14:15:15	W6_13_15	M544E6_001	7	0:29:13	Upslope launch, wind drive 6.430v (5.020m/s)
	14:30:37	W6_13_15	M544E6_002	7	0:29:53	Upslope launch, wind drive 6.430v (5.020m/s)
	14:45:03	W6_13_15	M544E6_003	7	0:30:36	Crest launch, wind drive 6.430v (5.020m/s)
	15:00:17	W6_13_15	M544E6_004	7	0:31:13	Crest launch, wind drive 6.430v (5.020m/s) failed launch, repeat
	15:15:29	W6_13_15	M544E6_005	7	0:32:06	Crest launch, wind drive 6.430v (5.020m/s)
	15:30:01	n/a	M544E1_004	7	0:32:48	Calm launch w boom, no wind

		Convert davit structure to perp, intact condition.				
	17:02:45	JON_HS6P7_TP9P3_DRV	JON_HS6P7_TP9P3_001	n/a	n/a	Run new wave w/o matching, to be converted to snapshots
		Set up davit auto release system, mount lifeboat and attempt launches w/ w5_13_15				
		Wavemaker crashed while stopping above wave, reports position error mcu1, seg 1. Re-enable and restart w/o problem				
	19:08:51	W5_13_15	drop_check_001	n/a	n/a	check run for drop system, system not responding.
	19:33:36	W5_13_15	drop_check_002	n/a	n/a	check run for drop system, system not responding.
		Shut down hydraulics				
		Remove all blanking walls				
30-Jan-02		Start up hydraulics				
		Rezero all waveprobes				
		Reposition all items moved to allow removal of blanking walls, replace davit lines				
		set up peak cal tree on island to cal cameras				
		Peak video cal w/tree		7	0:33:19	3 attempts, normal, floodlight, ceiling lights off
		set up video cal grid to cal camera dimension				
		Grid cal ovhd view		7	0:34:23	grid dimension 180 x 118 mm
		Grid cal beam view		7	0:34:54	grid dimension 180 x 118 mm
	10:29:27	W5_13_15	drop_check_003	n/a	n/a	
	10:37:57	W5_13_15	drop_check_004	n/a	n/a	
	10:51:00	W5_13_15	drop_check_005	n/a	n/a	
	10:57:35	W5_13_15	drop_check_006	n/a	n/a	
		Troubleshooting of failed auto launch system shows all signals present however davit releases will not open with weight of lifeboat loading bomb release latches.				
	11:13:22	JON15_HS6P7_TP9P3_DRV	JON15_HS6P7_TP9P3_001	n/a	n/a	Run new wave w/o matching, to be converted to snapshots
	12:07:50	15W4_13_15_DRV	15W4_13_15_001	n/a	n/a	Run new wave w/o matching
	12:25:03	15W5_13_15_DRV	15W5_13_15_001	n/a	n/a	Run new wave w/o matching
	12:36:26	15W6_13_15_DRV	15W6_13_15_001	n/a	n/a	Run new wave w/o matching
		Series Q: no boom, intact, perp. Launch, heavy disp, crossed reg waves				
	13:11:16	n/a	M544Q1_001	7	0:35:17	Calm launch w/o boom, no wind
	13:17:49	n/a	M544Q1_002	7	0:35:51	Calm launch w/o boom, no wind
	13:21:54	n/a	M544Q1_003	7	0:36:38	Calm launch w/o boom, no wind
	13:26:07	15W5_13_15_DRV	M544Q5_001	7	0:37:13	Davit release failed
	13:41:05	15W5_13_15_DRV	M544Q5_002	7	0:38:13	Davit release failed
		Model removed from tank, davit release system checked, davit releases modified, model charged and continue testing.				
	14:04:36	SNAP_HS6P7_TP9P3_DRV	SNAP_HS6P7_TP9P3_001	n/a	n/a	Run new snapshot
	14:21:25	SNAP15_HS6P7_TP9P3_DRV	SNAP15_HS6P7_TP9P3_001	n/a	n/a	Run new snapshot
		Recent repairs to davit release system are thought to have enabled usage of drop system as well, attempt "dry drop" of lifeboat, failed. Return to test program.				
	15:51:27	15W5_13_15_DRV	M544Q5_003	7	0:38:59	Crest launch, wind drive 5.465v (4.271m/s)
	16:06:05	15W5_13_15_DRV	M544Q5_004	7	0:39:48	Upslope launch, wind drive 5.465v (4.271m/s)
	16:21:51	15W5_13_15_DRV	M544Q5_005	7	0:40:38	Crest launch, wind drive 5.465v (4.271m/s)
	16:36:24	15W5_13_15_DRV	M544Q5_006	7	0:41:16	Crest launch, wind drive 5.465v (4.271m/s)
	16:51:08	15W6_13_15_DRV	M544Q6_001	7	0:41:56	Crest launch, wind drive 6.430v (5.020m/s)
	17:06:09	15W6_13_15_DRV	M544Q6_002	7	0:42:39	Upslope launch, wind drive 6.430v (5.020m/s)
	17:22:00	15W6_13_15_DRV	M544Q6_003	7	0:43:26	Upslope launch, wind drive 6.430v (5.020m/s)
	17:37:05	15W6_13_15_DRV	M544Q6_004	7	0:44:10	Crest launch, wind drive 6.430v (5.020m/s)
	17:52:34	n/a	M544Q1_004	7	0:44:56	Calm launch w/o boom, no wind
		Series R: boom, intact, perp. Launch, heavy disp, crossed reg waves				
	17:56:09	n/a	M544R1_001	7	0:45:28	Calm launch w/ boom, no wind
	17:59:23	n/a	M544R1_002	7	0:45:57	Calm launch w/ boom, no wind
	18:02:09	n/a	M544R1_003	7	0:46:30	Calm launch w/ boom, no wind

	18:07:07	15W5_13_15_DRV	M544R5_001	7	0:47:03	Crest launch, wind drive 5.465v (4.271m/s)
	18:22:14	15W5_13_15_DRV	M544R5_002	7	0:47:43	Crest launch, wind drive 5.465v (4.271m/s)
	18:37:30	15W5_13_15_DRV	M544R5_003	7	0:48:20	Upslope launch, wind drive 5.465v (4.271m/s)
	18:52:40	15W5_13_15_DRV	M544R5_004	7	0:48:59	Crest launch, wind drive 5.465v (4.271m/s)
			Davit lines fraying, replace and continue.			
	19:13:32	15W6_13_15_DRV	M544R6_001	7	0:49:37	Upslope launch, wind drive 6.430v (5.020m/s)
	19:28:20	15W6_13_15_DRV	M544R6_002	7	0:50:20	Upslope launch, wind drive 6.430v (5.020m/s) Tag line stuck, run aborted, repeat
			Shut down hydraulics			
	19:44:47	n/a	M544R1_004	7	0:51:11	Calm launch w/ boom, no wind
31-Jan-02			Start up hydraulics Rezero all waveprobes			
	19:10:36	n/a	M544R1_005	7	0:52:27	Calm launch w/ boom, no wind
	9:15:14	15W6_13_15_DRV	M544R6_003	7	0:52:53	Upslope launch, wind drive 6.430v (5.020m/s)
	9:30:07	15W6_13_15_DRV	M544R6_004	7	0:53:36	Upslope launch, wind drive 6.430v (5.020m/s)
	9:45:06	15W6_13_15_DRV	M544R6_005	7	0:54:15	Crest launch, wind drive 6.430v (5.020m/s)
	10:00:04	n/a	M544R1_006	7	0:54:56	Calm launch w/ boom, no wind

Series S: no boom, intact, perp. Launch, heavy disp, colinear irr waves

10:04:28	n/a	M544S1_001	7	0:55:30	Calm launch w/o boom, no wind
10:07:07	n/a	M544S1_002	7	0:56:13	Calm launch w/o boom, no wind
10:11:23	SNAP_HS6P7_TP9P3_DRV	M544S5_001	7	0:56:45	wind drive 5.465v (4.271m/s)
10:34:52	SNAP_HS6P7_TP9P3_DRV	M544S5_002	7	0:59:52	wind drive 5.465v (4.271m/s)
10:49:19	SNAP_HS6P7_TP9P3_DRV	M544S5_003	7	1:02:20	wind drive 5.465v (4.271m/s)
11:04:25	SNAP_HS6P7_TP9P3_DRV	M544S5_004	7	1:04:55	wind drive 5.465v (4.271m/s)

Series T: boom, intact, perp. Launch, heavy disp, colinear irr waves

11:22:19	n/a	M544T1_001	7	1:07:36	Calm launch w/ boom, no wind
11:25:32	n/a	M544T1_002	7	1:08:27	Calm launch w/ boom, no wind
11:30:02	SNAP_HS6P7_TP9P3_DRV	M544T5_001	7	1:09:02	wind drive 5.465v (4.271m/s)
11:46:29	SNAP_HS6P7_TP9P3_DRV	M544T5_002	7	1:11:38	no wind, repeat
12:01:46	SNAP_HS6P7_TP9P3_DRV	M544T5_003	7	1:14:02	wind drive 5.465v (4.271m/s)
					Lifeboat low battery light illuminating untermittantly, check, nothing found, continue.
12:19:41	SNAP_HS6P7_TP9P3_DRV	M544T5_004	7	1:16:37	wind drive 5.465v (4.271m/s) Tag line stuck, repeat
12:34:08	SNAP_HS6P7_TP9P3_DRV	M544T5_005	7	1:19:19	wind drive 5.465v (4.271m/s)

Series U: no boom, intact, perp. Launch, heavy disp, crossed irr waves

12:49:05	n/a	M544U1_001	7	1:21:50	Calm launch w/o boom, no wind
12:52:03	n/a	M544U1_002	7	1:22:18	Calm launch w/o boom, no wind
13:06:51	SNAP15_HS6P7_TP9P3_DRV	M544U5_001	7	1:22:51	wind drive 5.465v (4.271m/s)
					Has just been reported that qualisys data has been bad at rest / embarkation points throughout entire "T" series. Remove lifeboat and attempt to replace broken qualisys marker.
13:43:44	SNAP15_HS6P7_TP9P3_DRV	M544U5_002	7	1:24:58	wind drive 5.465v (4.271m/s)
13:58:04	SNAP15_HS6P7_TP9P3_DRV	M544U5_003	7	1:27:04	wind drive 5.465v (4.271m/s)

Series V: boom, intact, perp. Launch, heavy disp, crossed irr waves

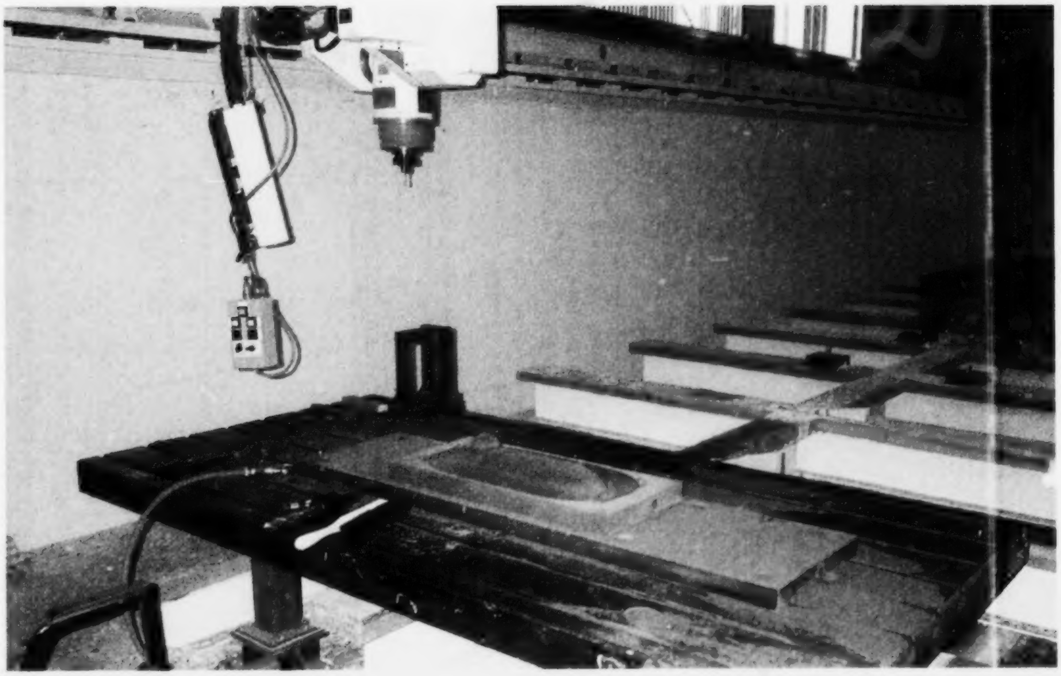
14:13:38	n/a	M544V1_001	8	0:00:00	Calm launch w/ boom, no wind
14:17:58	n/a	M544V1_002	8	0:00:30	Calm launch w/ boom, no wind
14:21:55	SNAP15_HS6P7_TP9P3_DRV	M544V5_001	8	0:01:07	wind drive 5.465v (4.271m/s)
14:36:28	SNAP15_HS6P7_TP9P3_DRV	M544V5_002	8	0:03:07	wind drive 5.465v (4.271m/s)
15:02:07	SNAP15_HS6P7_TP9P3_DRV	M544V5_003	8	0:05:09	wind drive 5.465v (4.271m/s)
15:17:48	n/a	M544V1_003	8	0:07:10	Calm launch w/ boom, no wind

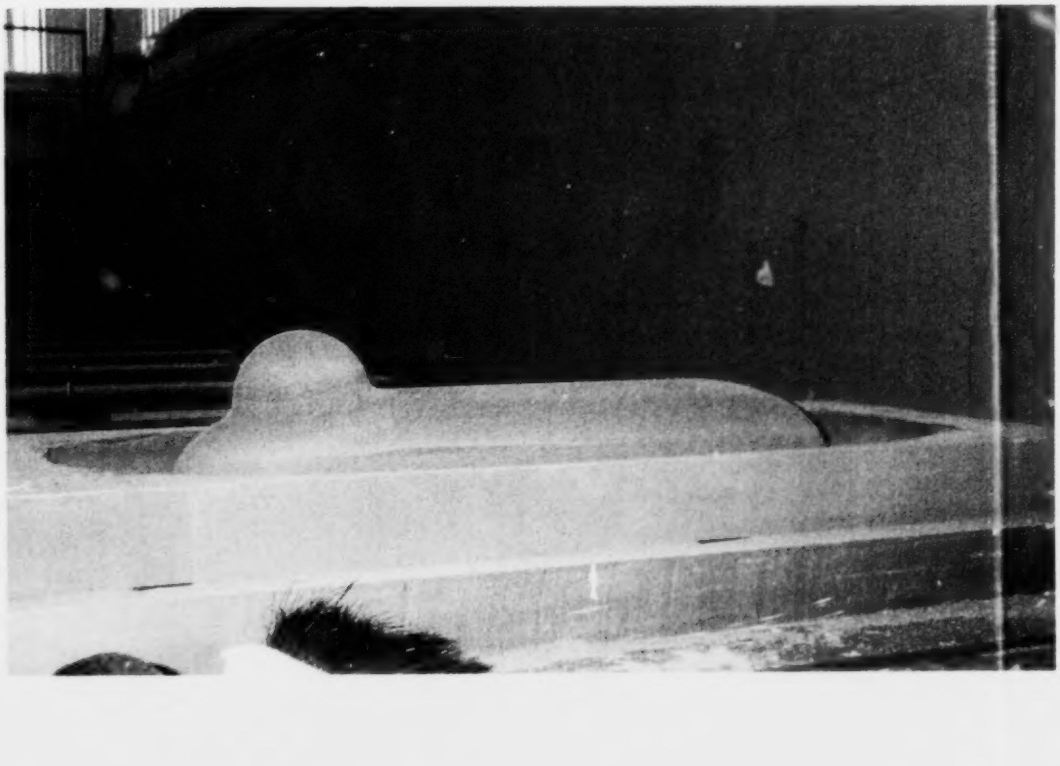
Further attempts to use "drop" system prove unsucessfull, complete earlier skipped w4 drops.

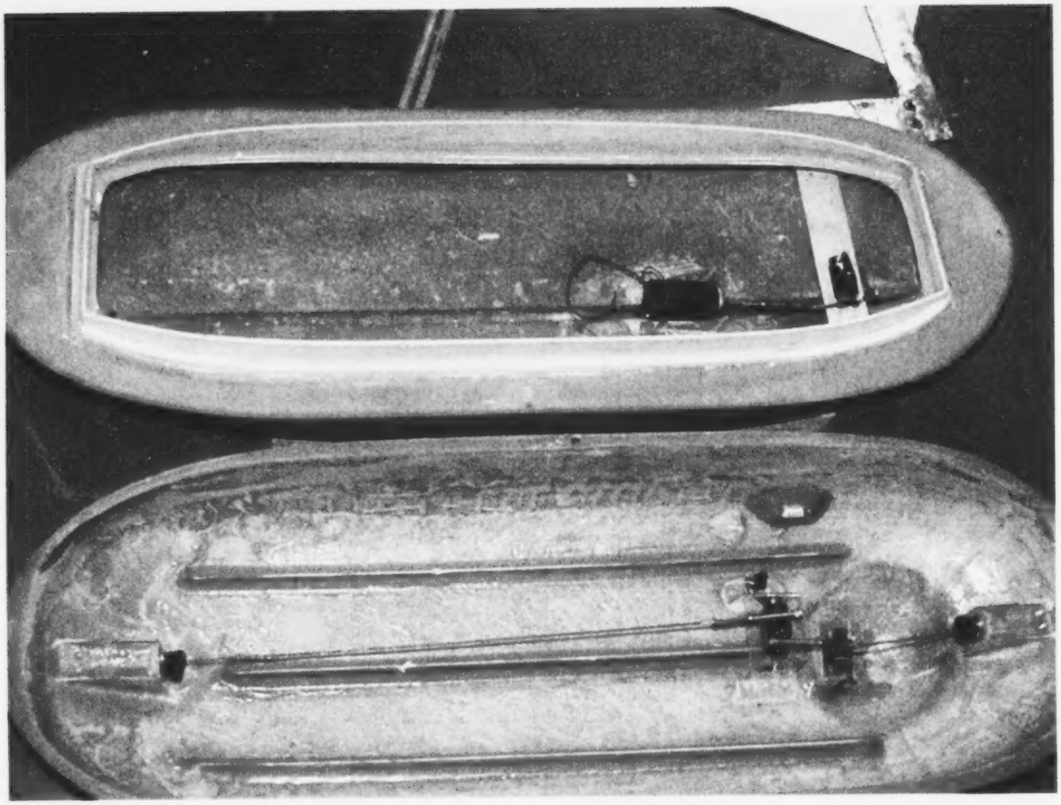
		Series Q: no boom, intact, perp. Launch, heavy disp, crossed reg waves				
	16:12:34	n/a	M544Q1_005	8	0:07:42	Calm launch w/o boom, no wind
			Due to ballast adjustments performed during "drop" system troubleshooting, decay series check to be performed to re-verify lifeboat motions.			
	16:15:48	n/a	decays_m13_006	n/a	n/a	Heavy condition roll, pitch, heave decays
	16:20:05	15W4_13_15_DRV	M544Q4_001	8	0:08:13	Davit release failed
	16:35:17	15W4_13_15_DRV	M544Q4_002	8	0:09:16	Davit release failed
	16:50:15	15W4_13_15_DRV	M544Q4_003	8	0:10:09	Davit release failed
	17:10:29	15W4_13_15_DRV	M544Q4_004	8	0:10:47	Crest launch, wind drive 4.464v (3.495m/s)
	17:25:02	15W4_13_15_DRV	M544Q4_005	8	0:11:28	Crest launch, wind drive 4.464v (3.495m/s)
	17:40:03	15W4_13_15_DRV	M544Q4_006	8	0:12:09	Upslope launch, wind drive 4.464v (3.495m/s)
	17:55:08	15W4_13_15_DRV	M544Q4_007	8	0:12:59	Upslope launch, wind drive 4.464v (3.495m/s)
		Series R: boom, intact, perp. Launch, heavy disp, crossed reg waves				
	18:10:03	n/a	M544R1_007	8	0:13:44	Calm launch w/ boom, no wind
	18:14:24	15W4_13_15_DRV	M544R4_001	8	0:14:16	Upslope launch, wind drive 4.464v (3.495m/s)
	18:29:03	15W4_13_15_DRV	M544R4_002	8	0:15:05	Crest launch, wind drive 4.464v (3.495m/s)
	18:44:10	15W4_13_15_DRV	M544R4_003	8	0:15:47	Upslope launch, wind drive 4.464v (3.495m/s)
	18:59:30	15W4_13_15_DRV	M544R4_004	8	0:16:28	Crest launch, wind drive 4.464v (3.495m/s)
			Shut down Hydraulics			
	19:14:34	n/a	M544R1_008	8	0:17:07	Calm launch w/ boom, no wind
			The End (for now....)			
	10:18:51	n/a	Island_pluck_001	n/a	n/a	Pluck from south side. Centre of island. Single line
01-Feb-02	10:31:59	n/a	Island_pluck_002	n/a	n/a	Pluck from south side. Centre of island. Double the line
	10:41:09	n/a	Island_pluck_003	n/a	n/a	Pluck from south side. Connected to easterly point on wooden frame of Davits. Davits height at test position.Double the line
	10:47:41	n/a	Island_pluck_004	n/a	n/a	Pluck from south side. Connected to easterly point on wooden frame of Davits. Davits frame all the way up.Double the line
	10:52:53	n/a	Island_pluck_005	n/a	n/a	Pluck from south side. Connected to easterly point on wooden frame of Davits. Davits frame all the way down. Double the line

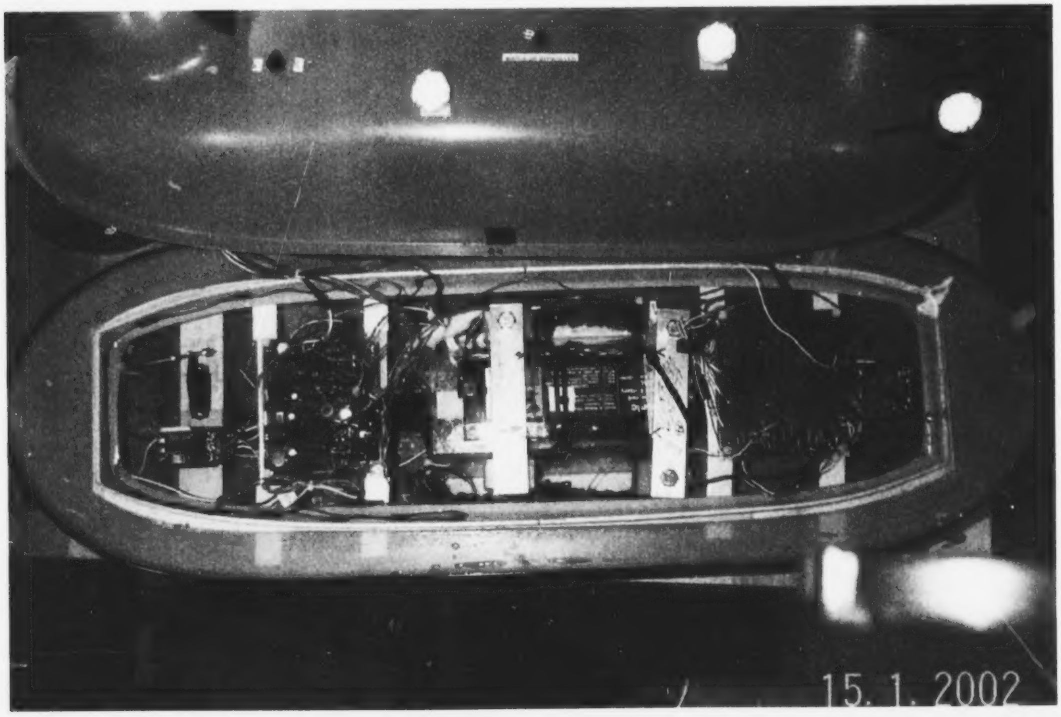
Appendix 10

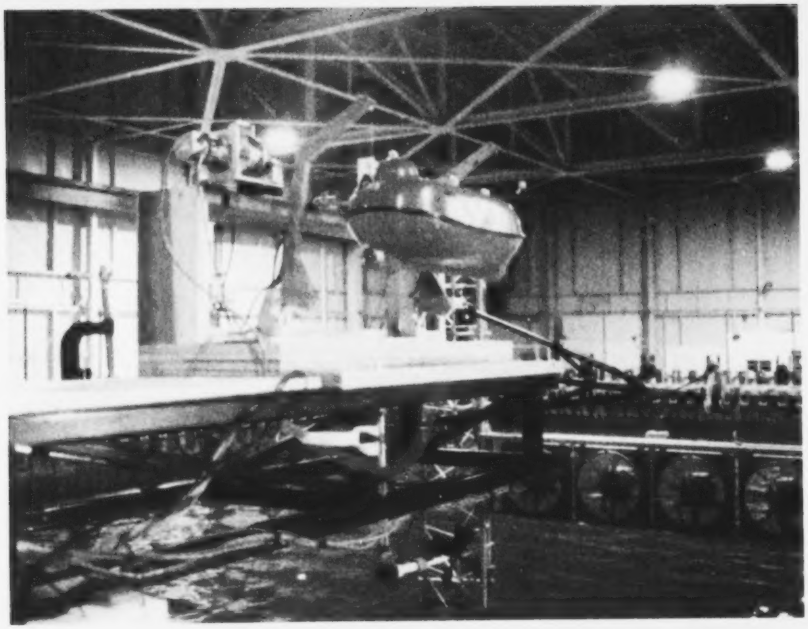
Selected Photographs of Construction, Setup, Testing

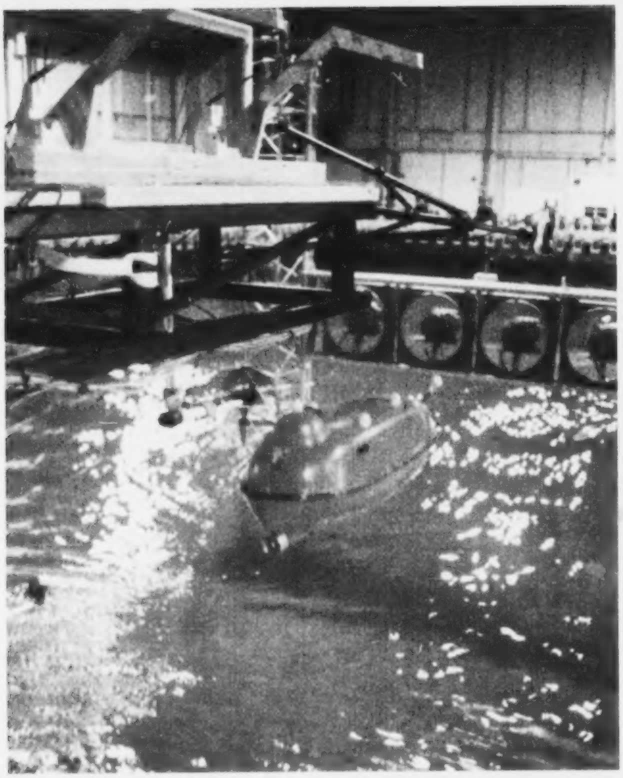


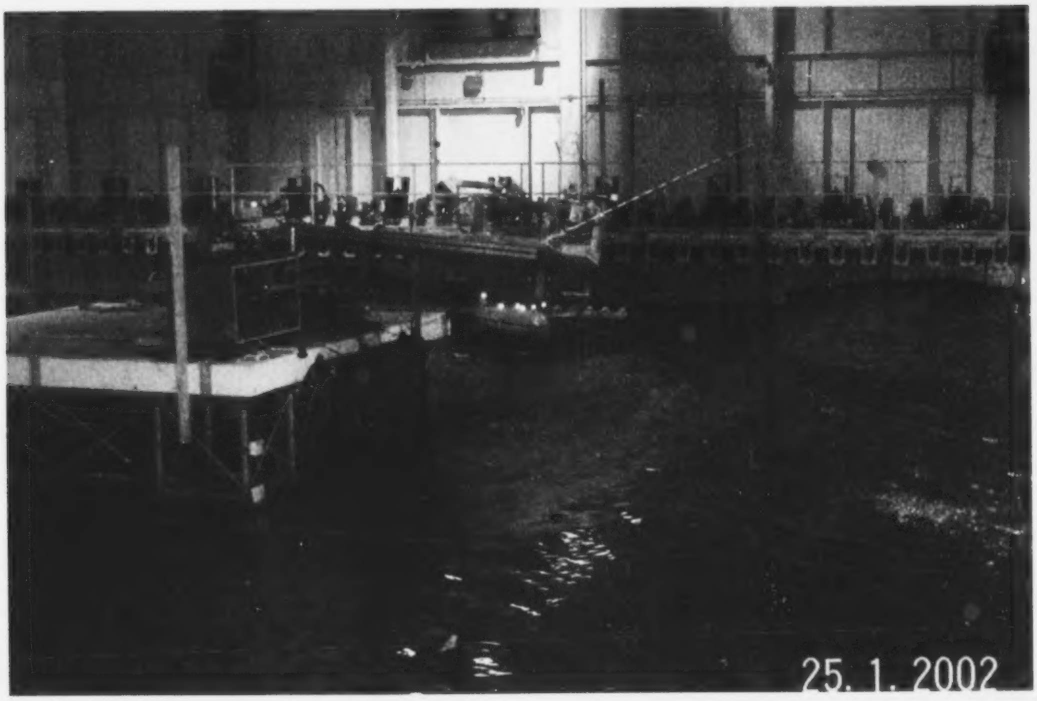


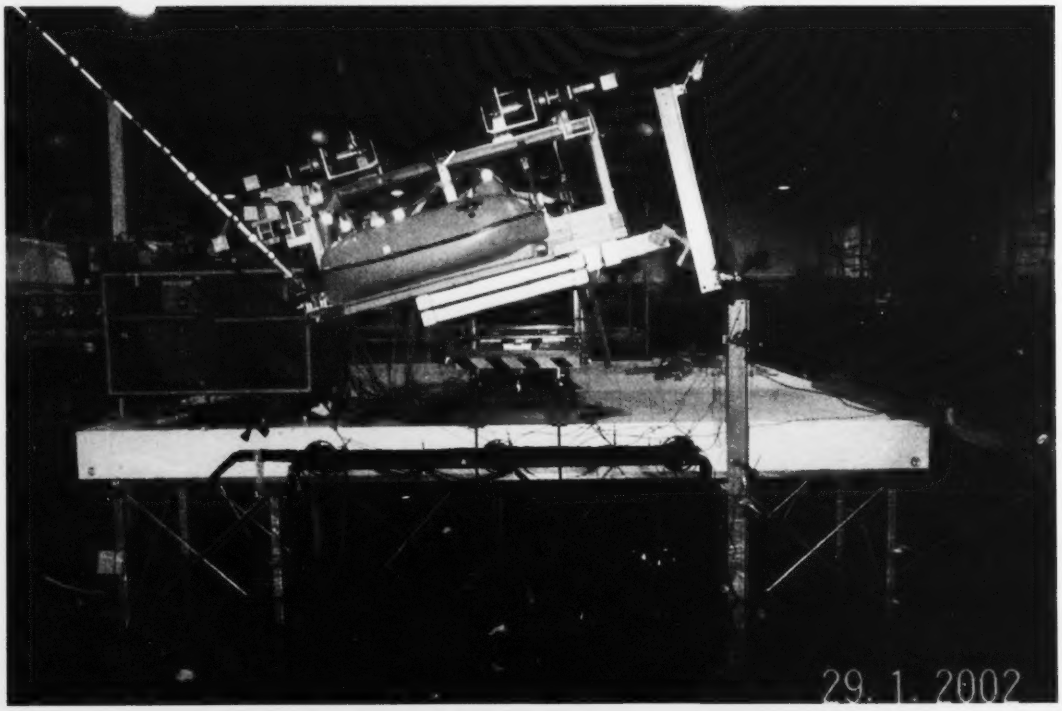



15. 1. 2002






25. 1. 2002


29. 1. 2002